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BRITISH MEDICAL JOURNAL

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SATURDAY NOVEMBER 25 1944

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BRITISH MEDICAL ASSOCIATION, TAVISTOCK SQUARE, LONDON, W.C.1

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'ROCHE' News in Brief

Vitamin C Saturation in Hospital Children

From the results of an extensive investigation recently completed at the Royal Hospital for Sick Children, Glasgow, the authors concluded that "while full saturation may not be necessary for the maintenance of health, it appears to us that children living in slums where acute infections are so prevalent should have ample supplies of vitamin C, because with the onset of infection their reserves tend to become exhausted. Similarly, in the medical wards of children's hospitals, precautions should be taken to ensure that ample vitamin C in one form or another is given to all patients." (*Glasgow Med. Journ.*, 1944, *24*, p. 55.)

'Prostigmin' and Blood Clotting

A heparin tolerance test has recently been devised which is considered to be valuable in showing delicate changes in the blood clotting mechanism. By means of this test the author has shown that autonomic stimulation shortens the coagulation time whilst vagal stimulation prolongs it. 'Prostigmin' was found to raise the heparin curve, and when given post-operatively in gynæcological cases prevented the flattening of the curve seen during the first 2 to 4 days after operation when the danger from thrombosis is greatest. "'Prostigmin' in our experience has improved the clotting tendency of the post-operative state and is useful to combat post-operative atony of the intestines and bladder." (*Arch. Surg.*, 1944, *48*, p. 105.)

Biological Activity of the Tocopherols

The vitamin E fraction of wheat-germ oil presents a mixture of alpha, beta and gamma tocopherols while the synthetic tocopherol preparation consists only of the alpha isomer. In a recent paper in the *Journal of Nutrition* (*25* (5), 433–440, 1943) entitled "Biological Determination of Vitamin E," it is reported that—according to feeding tests—synthetic alpha, beta and gamma tocopherols and α-tocopheryl acetate have the relative biological activities of 100, 25, 19 and 100 respectively. Rats on a low vitamin E diet gained weight during pregnancy in direct proportion to the amount of α-tocopherol given. These tests point to the superior action of α-tocopheryl over the beta and gamma isomers respectively.

Sulphonamide Sensitivity

Striking results from the use of ascorbic acid to relieve the effects of sensitivity to sulphapyridine are reported by Schropp. In a case of pneumonia in a child the first dose of sulphapyridine produced herpes labialis, soreness of the mouth and eyes, soreness and bleeding of the gums and vesicles on the mucous membrane of the lip. A 50-mg. dose of ascorbic acid given with each subsequent dose relieved all these side-reactions, and 18 hours after the first dose of ascorbic acid the temperature had fallen, and the soreness of the mouth and gums had disappeared. (*Canad. Med. Assoc. Journ.*, 1943, *49*, p. 515.)

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BRITISH MEDICAL JOURNAL

LONDON SATURDAY NOVEMBER 25 1944

GENERAL ANAESTHESIA IN SHOCK

BY

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(From the London Hospital)

Operations on seriously shocked patients are associated with a notoriously high mortality. This may be due to further loss of blood entailed during the operation, to the stimulus of the operative manipulations, or to the anaesthetic. In the present investigation an attempt has been made to evaluate the relative importance of these factors and to determine if any modifications of the methods in common use can lessen the mortality rate. It has become apparent that the most important single factor has been the anaesthetic, and an examination has therefore been made of the effect of different anaesthetics on the cardiovascular systems of patients with normal plasma volumes who have undergone various operations. These observations have enabled a clearer interpretation to be placed on the effect of these anaesthetics on shocked patients whose plasma volumes were below normal.

A series of 26 patients with normal plasma volumes were examined, of whom 19 underwent various major operations—the majority a partial gastrectomy—and 7 underwent minor operations. In all cases the pulse and respiration rates and the blood pressure were recorded at about three-minute intervals. Determinations of plasma volume (Crooke and Morris, 1942; Morris, 1944) were made and the dye-concentration curves followed at about 30-minute intervals until the end of the operation. The haemoglobin (Rimington, 1942) was also determined at the same intervals. Electrocardiographic records were made in nine cases which underwent major operations.

Changes in the blood pressure were not found to be related to any particular operative manipulation by the surgeon in any of these cases, but they could be produced by alterations in the depth or type of anaesthesia. The effect of increasing depth of different anaesthetics on blood pressure is summarized in the following table.

Anaesthetic	Blood Pressure				
	Rise	Rise, then Fall	Fall, then Rise	Fall	Constant
Nitrous oxide, oxygen, and ether	5	2	2	2	3
Cyclopropane	7	0	0	1	0
Spinal	0	0	0	4	0
Sodium pentothal ..	0	0	0	2	0

Fourteen patients who were given nitrous oxide, oxygen, and ether underwent major operations. At some period of the operation a large amount of ether was given in order to obtain very deep anaesthesia, but the effect on the blood pressure was very variable. Two examples are shown in Figs. 1 and 2. Eight patients were given cyclopropane, but two have already been included in the group who were given nitrous oxide, oxygen, and ether. In these two the anaesthetic was changed to cyclopropane towards the end of the operation. The blood pressure rose in proportion to the depth of the anaesthesia (Figs. 2 and 3), except in one of three patients who had only minor operations. In this case the blood pressure fell from an initial level of 195/100 mm. Hg to 145/90 mm. Hg. Two of the four patients who had spinal analgesics under-

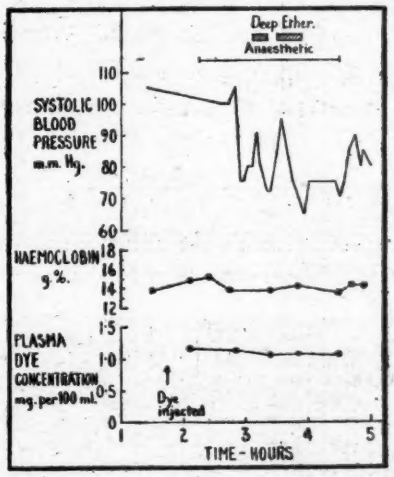

FIG 1.—Effect of nitrous oxide, oxygen, and ether on blood pressure, haemoglobin, and dye concentration.

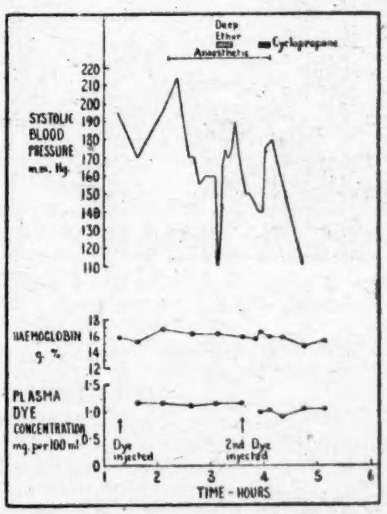

FIG. 2.—Effect of nitrous oxide, oxygen, and ether, followed by cyclopropane and oxygen, on blood pressure, haemoglobin, and dye concentration

went major operations. The blood pressure fell in all of them, and in one the fall was very marked (Fig. 4). Two patients who had minor operations were given sodium pentothal, and the blood pressure fell in both.

* Member of the Mobile Team of the Shock Committee of the Medical Research Council under Sir James Walton.

These changes in the blood pressure did not appear to be effected through any changes in the plasma volume, since the dye-concentration curves and the haemoglobin level showed no significant alterations during the operation, as would have occurred if water had been lost from the blood stream into the surrounding tissues. The plasma volume was determined a second time at the end of all major operations in order to measure the haemorrhage. Anomalous dye-concentration curves were obtained in 10 patients, due to the previous injection of morphine or hyoscine (Bowler, Crooke, and Morris, 1944), but 9 patients had good second dye-concentration curves. Two of these showed an increase of plasma volume, three no change, and four a fall, but the changes were probably within the error of the method. In all these cases very great attention had been paid to haemostasis in order to eliminate haemorrhage

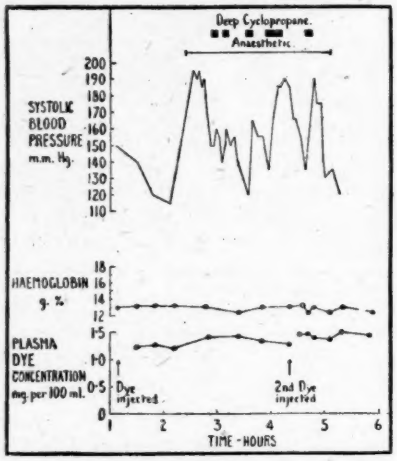

FIG. 3.—Effect of cyclopropane and oxygen on blood pressure, haemoglobin, and dye concentration.

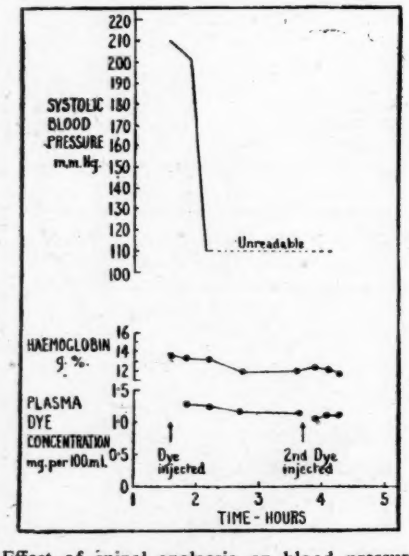

FIG. 4.—Effect of spinal analgesia on blood pressure, haemoglobin, and dye concentration.

as a factor affecting blood pressure, but haemorrhage occurring during an operation can be readily measured, as demonstrated by three other patients who underwent radical operations for carcinoma of the breast. Good dye-concentration curves were obtained, and the plasma volume fell from 3.31 to 2.47 l. in the first, from 2.47 to 2.0 l. in the second, and from 2.87 to 2.73 l. in the third.

The changes in the blood pressure were not effected through the heart, as judged by serial electrocardiograms which were taken in nine cases. Nitrous oxide, oxygen, and ether was given to five of the cases, nitrous oxide, oxygen, and ether followed by cyclopropane to two, cyclopropane and oxygen to two, and a spinal analgesic to one. The three limb leads were recorded in all cases before the operation, and Lead II was then taken at about 15-minute intervals during the operations and at other times when marked changes in the blood pressure occurred. Although cardiographic irregularities did take place they were never constant. When present they appeared to be related in no way to the changes in the blood pressure even when these were as marked as those shown in Fig. 4.

When these anaesthetics were given to patients with traumatic shock whose plasma volume was significantly reduced there was a greater tendency for the blood pressure to fall. Cyclopropane and oxygen generally caused an increase in blood pressure except in very severe cases, but even here the fall was less pronounced than with the other anaesthetics examined. Nitrous oxide and oxygen with a minimal amount of ether was the next most satisfactory, but an adequate amount of oxygen was essential. Deep ether or ether-and-chloroform anaesthesia caused a marked fall of blood pressure. In our series there are no records of shocked patients being given spinal analgesics, but several had sodium pentothal. Two of these had extensive burns, and the blood pressure fell from 145/80 mm. Hg to an unreadable figure in one and from 145/95 mm. Hg to 80/60 mm. Hg in the other. Induction was given to both patients by an expert anaesthetist, yet the former almost died on the operating table and the latter caused some anxiety. Examinations of plasma volume were attempted, but the dye-concentration curves were anomalous because the patients had received morphine shortly before injection of the dye.

Illustrative Cases

A number of examples are recorded to show the effect of various anaesthetics on shocked patients whose plasma volume had been determined.

Case 1.—A man aged 49 was injured by bomb splinters at 10.15 a.m., and was admitted to a small hospital together with a large number of casualties. He was probably not severely shocked on admission, because the surgeon had left him in order to deal with what he considered to be more serious cases. He had a compound fracture of the lower third of the right radius and ulna with much laceration of the tissues, a compound fracture of the left ankle involving mainly the astragalus with a metal foreign body retained subcutaneously, and a small deep puncture wound of the right forearm. He was given morphine gr. 1/4 at 11 a.m. At 4.15 p.m. he was conscious, quiet, and listless. His skin was ashen grey, cold, and moist. His pulse was 90 and blood pressure 50/45 mm. Hg. An electric blanket was placed over him. A rapid determination of plasma volume was begun at 4.32 p.m. Only two readings were taken, but they agreed closely, and gave a value of 2.54 l., or about 3.1% of body weight (about 13 st.). His haemoglobin was 10.5 g./100 c.cm. At 4.50 p.m. his condition appeared to be unchanged, but the blood pressure was unreadable. An attempt was made to start a transfusion; but there was considerable delay in getting this working, and it was 5.30 p.m. before it began to run freely. At 6.5 p.m. he had already received 686 c.cm. of plasma, and blood was transfused instead. He was now warm, more restless, and in some pain. At 6.15 p.m. his pulse was 70 and blood pressure 65/40 mm. Hg. At 6.45 p.m. he was definitely better and more co-operative, even smiling at the doctors; his blood pressure was 60/40 mm. Hg. At 6.50 p.m. the transfusion was stopped and he was moved to the theatre. He had now received 924 c.cm. of blood, and at 6.56 p.m. his haemoglobin was 9.6 g./100 c.cm. A further reading of plasma volume based on the initial injection of dye gave a figure of 2.9 l., or about 4.7% of body weight. This showed an increase of 1,360 c.cm. in the plasma volume, and agrees fairly well with the estimated water content of the transfusion, which was 1,300 c.cm., for he had obviously been losing some blood from his injuries during this period. At the same time a second injection of dye was given, and induction with a mixture of ether and chloroform was begun by a practitioner. At 6.58 p.m. the blood pressure was 70/50 mm. Hg. It then fell rapidly, being 65/40 mm. Hg at 7 p.m., 60/40 mm. Hg at 7.3 p.m., and then unreadable. The puncture wound of the left forearm was cleaned and sutured, and the wound of the left ankle was cleaned and sutured and the ankle put in plaster. The right forearm was not touched, for the patient died at 7.10 p.m. A sample of blood taken at this time showed a haemoglobin of 9.6 g./100 c.cm. and a plasma volume of 3.9 l. based on the second injection of dye. This is identical with the reading taken at 6.56 p.m. based on the first injection of dye, and confirms the observation that his plasma volume was now within the lower limit of normal. A post-mortem examination made by Dr. Joan Ross on the following day revealed no other injuries than those already described.

Case 2.—A man aged 29 was injured by bomb splinters at 12.30 a.m. and was admitted to hospital at 1.45 a.m., when his condition was described as "pretty serious." He was conscious but

drowsy and ashen-coloured. His systolic blood pressure was 60 mm. Hg and pulse rate 130. He was immediately given morphine gr. 1/4, followed by gr. 1/6 soon after. There was no obvious haemorrhage, so he was left quiet till 4 a.m., when a fuller examination was made. His systolic pressure had now risen to 80 mm. Hg. He had a compound fracture of the middle third of the right radius and ulna, total destruction of the ulnar side of the right carpus, and amputation of the right index and middle fingers. There was a laceration on the dorsum of the left ring-finger, with removal of the nail and exposure of the terminal phalanx. There were superficial abrasions of the abdomen. A two-inch-long penetrating wound was present on the outer aspect of the lower third of the right thigh and several small wounds above it. There was a large T-shaped lacerating wound on the anterior surface of the upper third of the right leg, with several small perforating wounds below it. The arterial supply to the lower two-thirds of the right leg had failed. A blood transfusion was started at 6 a.m., when his systolic blood pressure had risen to 105 mm. Hg and the pulse rate had fallen to 100. At 8 a.m. two bottles of blood had been given. At 10 a.m. the systolic pressure had again fallen to 85 mm. Hg, and the pulse rate was 120. There was little change until 11 a.m., when a plasma transfusion was started, and at 11.20 a.m. morphine gr. 1/4 was given. At 12.45 p.m. an attempt was made to determine the plasma volume. Two readings of 2.58 and 2.68 l., or about 2.8% of body weight (about 15 st.), were obtained. These figures are not very reliable, because morphine had been given only 80 minutes before injection of the dye and a slow transfusion was being carried out at the time. The haemoglobin was 11.8 g./100 c.cm. At this time his blood pressure was 105/65 mm. Hg. Two bottles of plasma were then given, and at 4 p.m. his general condition had improved considerably, and the systolic pressure was 130 mm. Hg. At 8 p.m. the systolic pressure was 120 mm. Hg, and at 8.40 p.m. a second determination of plasma volume was begun. No more morphine was given until 8.48 p.m., when a reliable curve was obtained, giving a value of 3.6 l., or about 3.8% of body weight. The haemoglobin was 11.4 g./100 c.cm. Induction with nitrous-oxide-oxygen and a little ether was begun at 9.31 p.m. The blood pressure was 100/55 mm. Hg immediately before anaesthesia was started. It rose to 110/65 mm. Hg at 9.35 p.m., and then fell gradually to 80/50 mm. Hg at 9.59 p.m. Subsequently it was maintained at 85/50 mm. Hg until the operation ended at 10.20 p.m. No ether was given after 9.38 p.m. and no nitrous oxide after 9.52 p.m., but oxygen was continued until the end of the operation. During this time the wounds were cleaned, and dead tissue and a few small fragments of loose bone were removed. The affected limbs were covered with vaseline packs, the right arm up to the hand encased in plaster, and the right leg bandaged. At 10.55 p.m. the systolic blood pressure had risen to 100 mm. Hg, and it continued to rise gradually to 140 mm. Hg at 8 a.m. on the next day. He was too ill, however, to have his gangrenous leg amputated, and he died at 4.30 p.m.

Case 3.—A man aged 56 was admitted to hospital at 11.52 a.m. shortly after being injured by a falling chimneystack. He was alert and in considerable pain. His skin was warm, moist, and of fairly good colour. He had a compound fracture of the lower third of the left tibia and fibula, a haematoma of the scalp above the left eye, and pain in the chest, especially on antero-posterior compression. His pulse rate was 47 and his blood pressure 110/60 mm. Hg at 12.30 p.m., when he was given morphine gr. 1/4. At 1.50 p.m. a determination of plasma volume was begun. In spite of having had morphine recently, a flat curve was obtained over the next five hours. It showed a value of 3.3 l., or 4.3% of body weight (12 st.), and his haemoglobin was 12.2 g./100 c.cm. His general condition remained unchanged during the afternoon, and at 5 p.m. his pulse rate was 48 and his blood pressure 130/70 mm. Hg. At 5.10 p.m. anaesthesia with nitrous oxide, oxygen, and a minimum amount of ether was begun. His pulse rate increased to 96 and blood pressure to 170/75 mm. Hg at 5.20 p.m. The pressure then gradually fell to 140/75 mm. Hg at 5.45 p.m., and remained at about this level until the anaesthesia ended at 6.35 p.m. During this time the wound in his leg was cleaned and excised, pins put through the two fragments of the tibia, the fracture reduced, a dressing applied, and the leg and foot put in plaster-of-Paris. Subsequently he made a good recovery.

Case 4.—A woman aged 38 was admitted to hospital at 11 p.m. semiconscious and smelling strongly of beer, having been picked up in the street. No further history was obtainable, but she was found to have multiple lacerations of the scalp, and a laceration of the left ankle, with an oblique fracture of the left tibia just above the malleolus and involving the articular surface. She was drowsy but abusive if roused. Her skin was moderately pale and sweating; her pulse rate was 80 and her blood pressure 100/60 mm. Hg. A determination of plasma volume was begun at 11.31 p.m., and gave a figure of 2.1 l., or about 3.8% of body weight (about 8¼ st.). The haemoglobin was 14 g./100 c.cm. She was given morphine gr. 1/4 at 11.52 p.m. and anaesthesia was begun at 2.3 a.m. Cyclopropane was given first, and the blood pressure, which was 100/65 mm. Hg when anaesthesia started, was maintained at about 110/80 mm. Hg until 2.23 a.m. Ether was then gradually substituted and the blood pressure became erratic, eventually falling to 80/60 mm. Hg at 2.38 a.m. Ether was then withdrawn, and the blood pressure returned to 100/80 mm. Hg at 2.41 a.m. The patient was beginning to come round, and cyclopropane was given again from 2.42 to 2.47 a.m., the blood pressure being maintained at about 100/70 mm. Hg. During this time the wounds were cleaned and sutured, the fracture reduced, and the ankle put in plaster. Subsequently she made an uninterrupted recovery.

Case 5.—A man aged 67 was knocked down in the street by a lorry at 6.30 a.m. and sustained a comminuted fracture of the left femur and a right Colles fracture. On admission to hospital at 7 a.m. he was conscious and in considerable pain. His pulse rate was 45, with many extrasystoles, and his blood pressure 170/80 mm. Hg. At 9.20 a.m. his pulse rate had increased to 82 and his blood pressure had fallen to 110/60 mm. Hg. His skin was very pale, but warm and not sweating. A determination of plasma volume was begun at 9.30 a.m., and gave a figure of 3.05 l., or about 4.8% of body weight (about 10 st.). The haemoglobin was 8.8 g./100 c.cm. There was no appreciable change in his condition throughout the day. He was given morphine gr. 1/4 at 11.15 a.m. and omnopon gr. 1/3 and scopolamine gr. 1/150 at 4.28 p.m. A second determination of plasma volume was begun at 4.32 p.m., but gave an anomalous curve. He was taken to the operating theatre at 5 p.m. and intravenous pentothal was given at 5.22 p.m. There was a rapid fall in blood pressure from 110/70 mm. Hg, taken immediately before anaesthesia started, to 85/55 mm. Hg six minutes later. Thereafter the blood pressure was maintained at about 90/55 mm. Hg until the operation ended at 5.48 p.m. Altogether 0.5 g. of pentothal was used. A Kirschner wire was inserted through the upper end of the tibia and extension applied to the femur. The Colles fracture was reduced and a plaster applied. Subsequently he improved steadily, the blood pressure returning to the original level of 110/70 mm. Hg at 7 p.m. Unfortunately, he had to undergo a further operation four days later for malposition of his fractured femur, and afterwards he developed pneumonia and died.

Discussion

The effect of various anaesthetics on plasma volume and the cardiovascular system has been extensively studied. It has been claimed that some anaesthetics—notably ether—cause a reduction of plasma volume in the human subject (Bonnycastle, 1942). No significant changes were found, however, in the present series of cases even with prolonged anaesthesia for major abdominal operations unless there was appreciable haemorrhage such as occurred with radical operations for carcinoma of the breast.

That the anaesthetics affected cardiac action seems unlikely, because no significant changes were found in the electrocardiograms of patients showing such profound alterations of blood pressure as that revealed in Fig. 4.

It seems likely, therefore, that the main effect of anaesthetics on blood pressure is by the vasomotor system. Most anaesthetics lower the blood pressure, but nitrous oxide, oxygen, and ether may elevate it, and cyclopropane and oxygen nearly always elevate it. In shocked patients all anaesthetics tend to be more depressing, and in patients whose plasma volume is much reduced the effect of depressing anaesthetics may be disastrous. This may apply to severe cases even after the plasma volume has been restored to normal, because the vasomotor system is apparently unstable for some time afterwards. Case 1 is an example of this. A man was wounded in the peripheral parts of his limbs and the bleeding was not checked. His plasma volume fell in the next 6½ hours to 3.1% of body weight, his haemoglobin to 10.5 g./100 c.cm., and his blood pressure became unreadable. A transfusion during the next 2½ hours restored his plasma volume to 4.7%, which is within the lower limit of normal; his haemoglobin was then 9.6 g./100 c.cm. There was considerable improvement in his general condition, but the blood pressure was still only 70/50 mm. Hg. An operation was undertaken 8¼ hours after the injury to clean the wounds and arrest further bleeding. So little was done surgically that it can have had only slight effect on the general condition; but the anaesthetic, a mixture of ether and chloroform, caused a rapid progressive fall in blood pressure and death in nine minutes.

The use of nitrous oxide and oxygen with a minimal amount of ether has a much less depressing effect, as demonstrated by a somewhat comparable patient (Case 2) who sustained severe wounds, chiefly to the peripheral parts of his limbs. Two bottles of blood were given between 5½ and 7½ hours after

the injury, and the plasma volume 12½ hours after was about 2.8% of body weight. The haemoglobin was 11.8 g./100 c.cm. There was a temporary improvement after the first transfusion, but the blood pressure subsequently fell to 85/50 mm. Hg, and two bottles of plasma were given, therefore, between 10½ and 15½ hours after the injury. A second determination of plasma volume 19¼ hours after the injury gave a figure of about 3.8% of body weight; the haemoglobin was 11.4 g./100 c.cm. Anaesthesia was begun 21 hours after the injury, and the blood pressure rose from 100/55 to 110/65 mm. Hg in the first 4 minutes and then fell steadily to 80/50 mm. Hg in the next 15 minutes. Ether was stopped after the first 7 minutes. The blood pressure was then maintained at 85/50 mm. Hg until the operation ended 49 minutes after the anaesthetic began. During the next 12 hours the systolic pressure rose to 140 mm. Hg, although eventually the patient died with a gangrenous leg.

In less severe cases nitrous oxide and oxygen with a minimal amount of ether may cause the blood pressure to rise, as demonstrated by Case 3. This patient sustained a compound fracture of the left tibia and fibula. His blood pressure was 110/60 mm. Hg 40 minutes after the accident, and his plasma volume was 4.3% of body weight and haemoglobin 12.2 g./100 c.cm. two hours after. No transfusion was given. When anaesthesia was begun 5¼ hours after the accident his blood pressure was 130/70 mm. Hg. It rose to 170/75 mm. Hg in the first ten minutes and then fell gradually to 140/75 mm. Hg in the next 25 minutes, remaining there till the operation ended 50 minutes later.

The best anaesthetic used in our shocked patients was cyclopropane and oxygen. It was employed in Case 4. This patient, who had a crushed foot and lacerated scalp, had a plasma volume of 3.8% of body weight and haemoglobin of 14 g./100 c.cm. 30 minutes after the accident. The blood pressure was then 100/60 mm. Hg. Anaesthesia was begun three hours after the accident, and the blood pressure rose slightly to 110/80 mm. Hg, where it remained for the next 20 minutes. At this time the cyclopropane was gradually changed to ether for the purpose of comparison, and the blood pressure fell during the next 15 minutes to 80/60 mm. Hg. After withdrawal of ether the blood pressure recovered, and it was maintained at 100/70 mm. Hg during the last five minutes, when cyclopropane was given again.

In attempting to assess the depressing effects of anaesthetics on the cardiovascular systems of shocked patients it is necessary to emphasize that quite severe injuries can occur with little reduction of plasma volume. This may explain why the lowering of blood pressure by an anaesthetic is sometimes less than might be expected. It occurred in Case 5, a man who sustained a compound fracture of the left femur and a right Colles fracture. His plasma volume was within the lower limit of normal —about 4.8% of body weight—his haemoglobin was 8.8 g./100 c.cm., and his blood pressure was 110/60 mm. Hg three hours after the accident. During the next 11 hours his general condition remained about the same and his blood pressure was 110/70 mm. Hg when intravenous anaesthesia with sodium pentothal was begun. It then fell steadily to 85/55 mm. Hg in the next six minutes, and remained at about this level until the anaesthesia ended 25 minutes later.

The chief factors in anaesthetizing shocked patients seem, therefore, to be, first, the use of a minimal amount of anaesthetic—and it is often surprising how little these patients require; secondly, the choice of an anaesthetic which stimulates rather than depresses the cardiovascular system; and, thirdly, an adequate amount of oxygen. It is unfortunate that the two most satisfactory anaesthetics—cyclopropane and oxygen, and nitrous oxide, oxygen, and ether—both require somewhat elaborate apparatus. Fortunately, however, in modern war it is possible for the great majority of patients to be brought back for operations to base hospitals where such apparatus is available.

Summary

Plasma volume and haemoglobin concentration were measured repeatedly in 26 patients undergoing various operations under nitrous oxide, oxygen, and ether, cyclopropane and oxygen, sodium pentothal, and spinal analgesics. No significant changes were found, although marked alterations in blood pressure occurred.

Serial electrocardiograms examined in nine patients showed no constant changes even though a marked alteration in blood pressure had taken place.

It is concluded that anaesthetics affect blood pressure mainly through the vasomotor system.

Cyclopropane and oxygen tended to raise the blood pressure; nitrous oxide, oxygen, and ether had variable effects on it; sodium pentothal and spinal analgesics depressed it.

In patients whose plasma volume was reduced by trauma there was a greater tendency for these anaesthetics to depress blood pressure.

Cyclopropane and oxygen was the best and nitrous oxide with adequate oxygen and a minimal amount of ether was the next best anaesthetic for these cases.

We are indebted to Dr. Miles for access to clinical material and to Mr. Whittingham and Dr. Murdoch for their co-operation in the cases undergoing major operations at Oldchurch Hospital, Romford. Dr. William Evans kindly examined the electrocardiograms for us.

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THE USE OF PENICILLIN PASTILLES IN ORAL INFECTIONS

A PRELIMINARY REPORT

BY

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In July of this year it was decided to attempt to treat various types of oral infection with local penicillin. Previous experience had shown that the use of a spray was unsatisfactory in the treatment of acute tonsillitis, presumably owing to the transient action so exerted, and it was felt in consequence that if any success were to be obtained, a means of maintaining an adequate concentration of penicillin in the mouth would be required.

It was therefore decided to try the effect of penicillin contained in a pastille. For this purpose a slow-melting medium unlikely to cause excessive salivation, approximately neutral in reaction, and not containing any penicillin inhibitor, was required. This was found in gelatin. To the gelatin base 0.1% nipagin was added in order to preserve the pastille, though whether this was necessary is doubtful, as pastilles kept over a period of three months do not appear to have deteriorated, apart from a slight hardening of the medium. In the preparation of the pastilles care was taken that the penicillin was not subjected to excessive heat; it was added to the gelatin base at 42° C. and stirred in just before the latter was about to set. Pastilles were cut to a standard size of approximately 3/8 in. square and 1/8 in. thick to facilitate insertion and retention in the buccal sulcus, and for trial purposes they were made in varying strengths from 1,000 units of penicillin to 100 units in each pastille.

With these pastilles experimental work was then carried out in order to determine: (1) that the penicillin derived from the pastille was present in effective concentration in the mouth, and that this concentration could be maintained; (2) that the incorporation of the penicillin in the pastille base would not interfere with its action, and that the pastille would keep and would remain active after its manufacture; (3) the effect of the pastille on the mouth and throat and their bacterial flora; (4) the required dose of penicillin in each pastille.

The results of these investigations were as follows:

1. A pastille containing 500 units of penicillin was allowed to melt in the buccal sulcus. After 15 minutes the pastille was removed and the penicillin content of the saliva was estimated by the standard technique. Further estimations at 15 and 30 minutes after removal

of the pastille were also made. These investigations showed that penicillin was present in the saliva in large quantities immediately after removal of the pastille and in fair quantities after 15 minutes, and was still present in small quantities up to 30 minutes after removal of the pastille.

2. The experiments described above showed that the penicillin remained active in the gelatin base, and similar experiments repeated on pastilles three months old have shown that there is no apparent diminution in their activity after this period.

3. Investigations on the effect of the pastilles on the bacterial flora of the mouth and throat have produced many interesting results from the bacteriological point of view. It is not felt that these results lie within the scope of the present paper, and they will therefore be reported in detail at a later date. It must be mentioned here, however, that it is possible greatly to reduce the number of organisms and even to produce sterile cultures. Numerous control cultures in which penicillinase has been employed to neutralize any penicillin present have shown that any decrease in the number of organisms cannot be due merely to penicillin having been transferred with the organisms on the swab to the culture medium. Further control experiments were performed in which pastilles made of the normal base but without penicillin, and similar pastilles without penicillin but containing citric acid, were employed in the same manner as the pastille containing penicillin. These experiments showed that there was no appreciable alteration in the bacterial flora when penicillin was absent from the pastilles, even with the excessive salivation evoked by the pastilles containing citric acid. The effect of the penicillin pastilles on the organisms associated with Vincent's infection and on haemolytic streptococci will be dealt with when the treatment of disease associated with these organisms is described.

4. The standard dose adopted is 500 units of penicillin in each pastille, although in cases of acute ulcerative gingivostomatitis (Vincent's type) pastilles containing only 250 units are now employed, as this strength has been found adequate in treatment. It is possible that pastilles containing 1,000 or more units might prove even more effective, but limitation in the supplies of penicillin has made it imperative to use the minimum adequate dose.

Method of Employment

Patients were seen daily for clinical and bacteriological control. On starting treatment each patient was instructed to place a pastille in the buccal sulcus, to leave it there until it had dissolved without chewing or sucking, and then to replace it with another. The time taken for the pastille to dissolve varied in different patients, and in general tended to be shorter in the earlier and more acute stages of the infection owing to the greater degree of salivation. The average, however, was about three-quarters of an hour. Particular instructions were given that a pastille should be inserted last thing at night and that it should be replaced should the patient wake. Great attention was paid to seeing that the patient fully understood the instructions given and the importance of regularity in the taking of the pastilles, since it was clear that much depended on intelligent co-operation. Apart from one patient who in error ate 10 pastilles in the first five minutes of treatment, we have received excellent co-operation. The very slightly bitter taste of the pastilles does not appear to be noticed in the presence of an acute oral infection, and even in the normal mouth it is not actively unpleasant.

Cases were divided into the following groups: (1) Acute ulcerative gingivostomatitis (Vincent's type). (2) Acute streptococcal tonsillitis (including scarlet fever). (3) Chronic streptococcal throat carriers. (4) Operations in the mouth and lesions of the oral cavity involving loss of surface: in this group were included post-tonsillectomy cases, fractures of the mandible compound into the mouth, trauma to the bone and mucosa following difficult dental extractions, and ulcerative conditions of the mucosa other than Vincent's.

1. Acute Ulcerative Gingivostomatitis (Vincent's Type)

So far, 25 cases of this type have been treated, including one of glandular fever and three in which the disease, of very severe form, was subsequent to a bismuth stomatitis while under treatment for syphilis. The response is best studied under the headings of "clinical" and "bacteriological."

Clinical.—All patients became asymptomatic in 24 hours, including several severe cases with pain, insomnia, and general symptoms. At the same time the characteristic fetor had gone. In 48 hours the sloughs on the ragged edges of the gums had disappeared, together with the signs of acute inflammation in the gums themselves. Epithelization of the ulcerated areas proceeded rapidly, and within five days the improvement in all cases was such that treatment was stopped. No patient had any treatment other than the pastilles, and no attempt was made to clean the gum pockets by syringing, mouth-washes, or instrumentation. Patients have been inspected at fortnightly intervals after the cessation of treatment and no relapse has yet been seen, though the shortness of the period during which the investigation has been conducted (three and a half months) clearly does not allow any conclusions to be drawn in this respect.

Bacteriological.—Twenty-four hours after treatment had started it was found that the spirochaetes which had previously been present in large numbers were absent, while the fusiform bacilli were much reduced. In 48 hours the fusiform bacilli were further greatly reduced and in many cases absent. In 72 hours both spirochaetes and fusiform bacilli were entirely absent, and at this stage it was a common experience to find that the films showed epithelial tissue with very few organisms of any sort. Films made at weekly and fortnightly intervals after cessation of the treatment have shown no evidence of recurrence in any patient. In order to be certain that the clinical and bacteriological improvement was due to penicillin and not to salivation or other mechanical factors, one patient with a severe infection was given pastilles made of gelatin and 0.1% nipagin only. There was no clinical or bacteriological improvement after 48 hours. Treatment with penicillin pastilles was then started. Films taken 24 hours later showed no spirochaetes or fusiform bacilli. This result coincided with clinical improvement, and a rapid cure ensued.

2. Acute Streptococcal Tonsillitis

As already stated, it was shown experimentally that it was possible very greatly to reduce the number of bacteria in the normal mouth and throat, and it was therefore evident that the penicillin was at least effective superficially. This diminution in the number of organisms, including the haemolytic streptococcus, suggested that the pastilles might be of practical value in the reduction of droplet infection. It was doubtful whether it would penetrate deeply enough into the tonsillar crypts to be effective in cases of tonsillitis, but its high diffusibility did not rule out the possibility, and it was therefore decided to try the pastilles in a group of patients with acute tonsillitis.

So far, 17 patients have been treated, and all showed pyrexia and the presence of Lancefield Group A haemolytic streptococci. In the tonsils there were variable degrees of hyperplasia. Included in this group are four cases of scarlet fever, one in an adult. No salicylates, mouth-washes, or any other treatment was given. The response will again be described under two headings.

Clinical.—The majority of patients became apyrexial within 24 hours and all were apyrexial within 48. There was great relief of local symptoms within 24 hours. This was particularly marked in a severe case of scarlet fever in an adult, who was taking solid food 24 hours after the beginning of treatment, in striking contrast to the controls, who were being treated with serum and sulphonamides.

In view of the small number of cases definite conclusions cannot be drawn, but the results certainly seemed to be better than could be accounted for by the chance selection of cases which happened to improve more rapidly than the normal. The results have, however, appeared striking enough to warrant further work being carried out, and it is hoped shortly to issue a report on a larger series.

Bacteriological.—In 7 patients haemolytic streptococci were no longer demonstrable 24 hours after treatment had started. In a further 6 they were no longer demonstrable after 48 hours. Of the remaining 4, of whom three had scarlet fever, one became negative only after six days, while the others possessed small numbers of haemolytic streptococci during the whole period of treatment and after it had finished, although the pyrexia had gone in 48 hours and the throat felt normal. The penicillin sensitivity of the organisms in these particular patients was comparable to that found in the others.

It is of importance to mention that in all these cases the usual technique of inoculation often failed to demonstrate

the presence of haemolytic streptococci after treatment with pastilles had been initiated, and it was possible to show that they were present only by what would by ordinary standards be considered gross over-inoculation. As previously stated, plates in which penicillinase was used were identical with those in which it was not used.

3. Chronic Streptococcal Throat Carriers

Twelve patients, all asymptomatic but proved by culture to be chronic carriers, were treated with pastilles given over a period of five days. Since they did not show any symptoms or noteworthy signs, the bacteriological results only will be discussed.

Bacteriological.—Of the 12 patients, seven gave negative cultures within 24, three within 48, and two within 72 hours. Two still show no haemolytic streptococci a month and six weeks respectively after cessation of treatment; one who became negative after 48 hours has not been seen again, and the remaining nine became positive within 1 to 15 days after stopping treatment, the average being 6 days. It was evident from these results that carriers could be kept clear while having pastilles, but that in the great majority of patients the organisms returned soon after cessation of treatment.

That the pastilles might be of some value even in carriers was shown by the case of a medical student who was known to be a carrier but who was unwilling to part with his tonsils. The presence of Group A haemolytic streptococci was not compatible with midwifery, and an attempt was therefore made to eliminate the organisms with a course of pastilles. Cultures became negative within 24 hours, but were positive again a few days after cessation of treatment. This result was repeated with a second course of pastilles, and it was decided, in consequence, that although his throat was a potential menace without pastilles, with them it was safe, and he was allowed to finish his course by taking them before and during deliveries.

4. Operations in the Mouth and Lesions of the Oral Cavity involving Loss of Surface

Three cases of fracture of the mandible compound into the mouth, two of difficult dental extraction involving considerable trauma, three of ulceration of the mucous membrane unassociated with Vincent's organisms, and three post-tonsillectomy cases have been treated. While these are too few in number for any definite conclusions to be drawn, certain facts are suggestive.

Fractures of the Mandible Compound into the Mouth.—All three patients with fracture of the mandible showed fractures at the region of the junction of the ramus and body of the mandible, and in one the fracture was bilateral. They were first seen 2, 5, and 15 days respectively after the original injury, had received no treatment at all, and all showed fractures compound into the mouth with displacement of the posterior fragment, and gross sepsis in the region of the fractures. All had marked external swelling over the fracture area and intense oral fetor, while one seen for the first time 15 days after injury showed a marked ulcerative gingivostomatitis associated with Vincent's organisms dating from the injury. Smears and cultures taken from the fracture line revealed many extremely penicillin-sensitive anaerobes. Within 24 hours of starting treatment the intense fetor had gone and patients stated that the mouth felt "cleaner." Cultures taken from the fracture line at this point were sterile in two cases, and in the third case yielded a small growth of *Haemophilus influenzae* only. Forty-eight hours after starting treatment cultures were negative in two patients and showed coliforms only in the third. The spirochaetes and fusiform bacilli present in the patient with associated ulcerative gingivostomatitis were entirely absent after 48 hours. Fixation and splintage of the mandible was carried out 24 hours after admission. In all patients the external swelling and oedema subsided at the end of a week. Two fractures have united firmly without incident, and the third appears to be uniting, though as only a fortnight has elapsed since the patient's admission the final result is not yet assured. In no case did local abscess formation occur.

Difficult Dental Extraction with Associated Trauma.—In two patients in whom lower molar teeth were extracted under regional novocain analgesia carious crowns broke off and elevators were used for extraction of the roots, causing damage to the bone and tearing of the gum. After the extractions the patients were given pastilles and were forbidden to use mouth-washes. In both cases the blood clot remained *in situ* as in an uncomplicated extraction and the gum healed rapidly without sloughing.

Ulceration of the Oral Mucous Membrane unassociated with Vincent's Organisms.—Three patients have so far been treated. Two showed large single painful ulcers inside the lip, and one had large multiple ulcers over the area of the uvula, lips, tongue, and cheeks. In the latter the ulcers had recurred over a period of 14 years, the Wassermann and Kahn reactions were negative, and the blood count was normal. Of the first two patients, one had a pure growth of pneumococci from the ulcer, and the other a mixed growth of pneumococci and haemolytic streptococci, with the former predominating. In the first two patients cultures were sterile 24 hours after the beginning of the treatment. The ulcers were healed in six and eight days respectively. In the third patient haemolytic streptococci and pneumococci were present in large numbers in the ulcerated areas of the uvula, lips, and tongue. No organisms could be demonstrated in any of these areas 24 hours after treatment had begun. During the next 10 days coliforms only were present. With the exception of one small area on the tongue, the ulcers were healed at the end of a fortnight, and coliforms alone were found in the cultures of the remaining area for one week after cessation of treatment. The patient was then sent on three weeks' leave. On return, three more ulcerated areas were present, and these proceeded to increase in size until the condition was very much as it was when first seen. Haemolytic streptococci and pneumococci were again present in large numbers.

Post-tonsillectomy.—Three patients have been treated. In two the tonsillar beds were sterile after 24 hours' treatment; they then started to show coliforms, *N. catarrhalis*, and *H. influenzae* in the cultures on the third and fifth days respectively. Both healed rapidly, with a reduction in the usual slough. The third yielded a profuse growth of haemolytic streptococci from the tonsillar beds after operation. These were greatly reduced in numbers after treatment for 24 hours, and were absent after 72 hours.

Conclusions

Penicillin included in a pastille under suitable conditions of manufacture is liberated in the mouth in an active form. The concentration in the mouth can be maintained and the pastille kept for a period of at least three months without appreciable deterioration or loss of efficiency of the penicillin. It is simple to use and is well tolerated even by children. (The youngest patient receiving pastilles was aged 5.)

Acute ulcerative gingivostomatitis (Vincent's type) can be treated more simply and more quickly with the use of penicillin pastilles than by any other method. In addition, the loss of tissue caused by the more usual treatments with caustics and escharotics can be avoided. It is not suggested that gingivectomy or other procedures to eliminate the gum pockets and stagnation areas will not be necessary at a later date, since while these pockets and areas remain, the possibility of recurrent infection is always present. The treatment described in advocated in the acute stages, and the fact that no recurrences have been seen over a period of three and a half months suggests that immediate recurrence is unlikely. In view of the fact that intravenous arsenicals are still widely employed in the treatment of the disease in spite of much evidence to show that it is ineffective, we consider that it is worth drawing attention to the fact that three of our most severe cases have been undergoing treatment for syphilis with injections of bismuth and intravenous arsenicals.

Patients with acute haemolytic streptococcal tonsillitis, including four with scarlet fever, seemed to respond clinically to treatment with pastilles. The effect on the throat flora appears to be rapid, but, even so, a larger series of cases is necessary before any final conclusions can be drawn. The early disappearance or reduction in numbers of haemolytic streptococci in the throat after treatment had started suggests that the risk of droplet infection is greatly reduced, and we regard this point as of importance epidemiologically.

The treatment of throat carriers of haemolytic streptococci proved disappointing, as was anticipated. Nevertheless it is of interest that they became negative while undergoing treatment, and, in the case of the medical student described, this fact proved of practical value.

In the small series of patients so far treated it appeared that surgical conditions of the mouth and throat could be kept free from pathogenic organisms during administration of the pastilles, with marked symptomatic relief.

On bacteriological grounds faucial diphtheria should be an indication for treatment with penicillin pastilles. Unfortunately we have as yet been unable to obtain suitable cases, but it is hoped to publish these results later in a fuller report.

We would like to express our gratitude to the Penicillin Clinical Trials Committee of the Medical Research Council and Prof. L. P. Garrod for providing the penicillin which made the investigation possible, and to the latter for his encouragement and helpful criticism. We are indebted to Miss G. E. Root for grouping the streptococci and cheerfully accepting other onerous duties. We would also like to thank Dr. Paton, the matron, and staff of the Sisters' Hospital for Infectious Diseases, St. Albans, for their kind co-operation; Lieut.-Col. O'Connor, and Captains Battson, Fairhurst, and Patterson of the Army Dental Corps for their help in referring cases of ulcerative gingivostomatitis to us; and many members of St. Bartholomew's Hospital Staff at Hill End E.M.S. Hospital, St. Albans, for kindly allowing us to treat their cases. We are greatly indebted to Mr. L. T. Martin, of the dispensary, Hill End Hospital, for making the pastilles.

AN ANALYSIS OF 259 OF THE RECENT FLYING-BOMB CASUALTIES

BY

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This is an attempt to present a picture of the recent flying-bomb raids as seen in a small E.M.S. hospital. For those interested in figures I have included tables. We admitted anyone requiring treatment that the rest centres could not provide. The selection was quite varied: by no means all our patients needed dramatic surgery to staunch a sea of blood, and some of our bizarre cases presented interesting problems. Not the least was a poor soul who had been blown into a tank of dirty industrial oil and appeared in the midst of a rush of casualties: we used our gas-decontamination centre for the first—and we hope the last—time.

In order to keep on admitting every day, every night—sometimes several times in the same night—we convoyed our patients as soon as they were fit to travel. Convoying has its own advantages and disadvantages. The former are obvious in the large turnover possible; the latter only appear later. We became the first cog of a large wheel: we admitted; we provided immediate treatment; we darned and patched and then transferred our patients at the first possible moment, accompanied by only brief notes. Continuity of treatment is bound to suffer, and it is very difficult to estimate the success and failure of one's efforts. This is the great weakness of the service. Some of our cases went as far afield as Wales; of their progress we knew nothing until discharge notes—quite as brief as ours had been—came trickling in. Later still a few of the patients themselves began to arrive as out-patients for review, but many have fallen by the wayside. There are great gaps in the story—inevitably so; some so gross that I wondered if it were possible to hold the interest with our jumbled facts and many loose ends; but I felt that if each link in the chain were pieced together—the casualty hospital, the base hospital, the ambulance trains, the distant evacuation centres—the story would be worth while.

In all we dealt with 222 out-patients and 259 in-patients, with 18 deaths. Our story began in June, 1944, when the first large incident occurred near by. Twenty-six casualties were admitted and 12 required theatre treatment. This proportion remained fairly constant throughout the series. Altogether we had 83 theatre cases out of 259 admissions, and had to send 35 cases on untreated, most of whom required the theatre. In this first incident no fewer than 16 of the casualties were due to flying glass. It was noticeable how the proportion of glass injuries dropped as the importance of taking adequate cover was realized, while the percentage of crush injuries increased from people being trapped by falling masonry.

In July we admitted 32 patients from a neighbouring hospital which had been hit, only to send them on in a few hours, to the great grief of the nursing staff, who had just succeeded in disentangling prostatic tubes from false teeth and restoring order out of chaos.

A night in July began our peak period. We admitted 24 cases, 6 requiring theatre treatment. Next morning, at 10 o'clock, a flying bomb dropped in a near-by market-place. The incident caused the highest number of casualties of the whole London attack. We admitted 74 to the wards and dealt with over 90 in the casualty department. At one time we had ambulances evacuating the night's casualties waiting their turn with ambulances bringing fresh wounded. In 24 hours over 100 patients were warded. This is the brighter side of the convoy system. As we could not deal with all the cases in our single theatre in reasonable time we re-evacuated 35 patients after rest, cleaning, and first-aid attention, and 15 more who had had minor operations. The most gravely injured we retained. In the tables T refers to the transferred cases, and any remarks about them are more liable to error since only a clinical diagnosis was made at the bedside and was unsupported by further investigations.

So much for the conditions. It was impossible to obtain complete accuracy when the cause of every death could not be proved by necropsy and some of the cases were whisked away with only a partial diagnosis.

Air-raid casualties may be divided into two great groups: (1) those who require surgical treatment, and (2) those who do not.

GROUP 1: REQUIRING SURGERY

These cases are best described in reference to the agent which caused the injury. Any patient may fall into more than one such category.

A. Flying Glass

This was the most frequent cause of injury, totalling over 100 casualties in all. Many included severe damage to the eyes. It is noticeable that most of the injuries were above the nipple line, chiefly of the face and neck: a large proportion were received when looking out of windows—a modern version of curiosity killing the cat. We had five cases of perforating wounds of both eyes and ten perforating wounds of one eye. The globe was usually completely destroyed. Many of these injuries were avoidable, and therein lay their great sadness.

The penetrating power of flying glass is, in the main, low. It is unusual for it to pierce the deep fascia: usually it lies just under the skin in the fat, but when present in hundreds of pieces it presents a problem which has not yet acquired a satisfactory solution; nor has the condition made its way into the textbooks of war surgery. Often the gashes are also begrimed with earth, wood, and stones: orthodox surgical toilet is an impossibility, or at least ill advised. We had two outstanding examples of this condition, which may stimulate interest and which are quite comparable in that the wounds were of roughly the same intensity and situation and both patients were very bad surgical risks—fat, heavy, and chronic bronchitics.

Case I (Miss X., aged 58)

This patient was admitted on June 23 suffering from compound fracture of the medial epicondyle of the left humerus, with surrounding destruction of skin and subcutaneous fat for an area of three-quarters of a square foot on the posterior surface of the arm. There was a similar wound on the posterior surface of the right arm, except that it was without bony injury. Her back was lacerated by flying glass—there were probably 100 cuts in all. On admission she was barely conscious, with a blood pressure of 90/70, and her pulse was scarcely perceptible. She was treated for shock by morphine, rest, hot-water bottles, and hot sweet tea. She was given A.T.S. 3,000 units and A.G.G.S. 4,000 units. An attempt to administer intravenous fluids by the legs failed owing to previous extensive ligation and injections for varicose veins, and her arms were unsuitable for intravenous therapy because of the many cuts. Some six hours after admission her condition had considerably improved; blood pressure had risen to 110/80, and she was quite rational and complaining of pain. She was taken to the theatre,

where both arm wounds were carefully cleaned and the soiled tissue excised; the wounds were packed with sulphathiazole and proflavine, 1%, with vaselined gauze, and the arms put in plaster. As her condition was deteriorating, the wounds of the back were washed with half-strength dettol, dusted with sulphanilamide powder and proflavine, and a vaselined gauze roll was applied. Many pieces of glass were removed from the gashes, most of which had penetrated the superficial fascia only. An intravenous drip was put into the long saphenous vein in the groin. The total time on the operating table was 2¼ hours. On return to the ward she was given 2 pints of blood and 2 pints of glucose-saline within the next 12 hours. Her condition on the following day was quite satisfactory, considering her physique—temperature 99°, pulse 120, respirations 28. On account of her emphysema she was given breathing exercises and, anticipating sepsis of the wounds, she was put on sulphapyridine, 1 g. 4-hourly. By the fifth day after operation her condition began to deteriorate; she was eating little and became drowsy. There was no anuria or oedema of the feet. On the sixth day her temperature began to climb to 100°; she complained of severe abdominal pain, and the pulse, having been down to 90, rose to 110, and the respirations to 35. She had signs of a consolidation at the base of the right lung and the abdomen was distended. She died in the afternoon of the seventh day after operation with gross dilatation of the abdomen.

At necropsy all the coils of gut were distended from paralytic ileus, and there was oedema of the lower lobes of the lungs. After removal of the plaster the arm wounds were absolutely clean and appeared just as they had left the theatre. The wounds of the back were surrounded by nothing more than a small area of oedema with a little reddening, and many of the wounds were oozing a serous discharge—a picture of indolence. The gut was grossly distended, as it had been just before death, from paralytic ileus. Histological examination of the liver showed marked cloudy swelling and fatty degeneration, with toxic changes in the spleen.

In retrospect several points stand out about this case. First, our experience, and that of other hospitals in the district, has shown that it is most unwise to allow an operation to extend for more than one hour in these very shocked patients. After an hour their blood pressure falls and their general condition deteriorates very rapidly. One should curtail one's activities within this time limit. Our careful surgical toilet of the extensive arm wounds probably cost the patient her life, since as the wounds were unchanged after seven days one can assume that the patient's resistance was very low, and there was no attempt at repair or reaction against the bacteria which must have been present. Secondly, I think she was taken to the theatre too soon. We gained the impression that the tendency is to operate too early—before the patient has recovered from profound shock, both psychological and cardiovascular—rather than too late. We allowed far longer for recuperation in the later cases of the series, with improved results. Thirdly, the object of the plaster was to immobilize the soft-tissue wounds, as advised by Trueta, in order to avoid pain and to prevent bacterial spread via the lymphatics. Both these objects were achieved, but psychologically I think it was unsound to imprison both arms of this type of patient, which made her feel still more helpless.

Case II (Mr. Y., aged 63)

This patient was admitted on July 3, 1944, with multiple cuts of the back and arms, which were very dirty, with earth and grit driven into the depths of the wounds. He was very shocked, with blood pressure 75/50, but conscious and able to drink. He was therefore given hot sweet tea and 1/4 gr. morphine, with A.T.S. 6,000 units and A.G.G.S. 22,500 units intravenously. It will be noticed that the latter was in accordance with the new instructions of the E.M.S. Memorandum, and a considerable increase on the dose given in Case I. His wounds were wrapped in sterile towels and he was left for a time, since his condition was considered to be almost hopeless and more promising cases demanded attention. About an hour after admission he was given 1 pint of plasma intravenously, followed by 3 pints glucose-saline in the next 12 hours. On July 4 he had not passed urine for 24 hours and, although the bladder was not palpable above the symphysis pubis, he was given carbachol 0.5 c.cm., and the dose was repeated half an hour later. Following this he passed about 10 oz. of urine. His condition next day had considerably improved, and his blood pressure rose to 100/80. His wounds had been entirely untouched apart from wrapping in the sterile towels. In view of our previous experience the correct course of treatment was debatable. We decided not to take him to the theatre; instead, his back was merely washed in the ward with dilute dettol, followed by half an hour's radiant heat, after which it was dusted with sulphanilamide powder, vaselined gauze and proflavine were applied, and the sterile towels were replaced over the wounds. The next day (72 hours after admission) his blood pressure had risen to 120/80, and it was decided to take him to the theatre. There a large piece of wood, 4 in. long and 1 in. in diameter, was removed from his back and a few pieces of glass were taken from the cuts, but no extensive exploration was carried out. His back was sprinkled with sulphathiazole and proflavine, 1%, and he was returned to the ward within 15 minutes, having had under 0.75 g. of pentothal. I feel that this visit to the theatre was superfluous, apart from the removal of the large piece of wood, which we had not been able to do in the ward. As he was a very fat and flabby man of 63, he was given breathing exercises daily. On July 6 he started having hot normal saline baths, which relieved his pain considerably. After the first day he was allowed to sit up in the bath and use ordinary soap, which he did with very great enthusiasm. His progress from then onwards was highly satisfactory; every day saw marked improvement. After the baths his back was dusted with sulphathiazole, and dry dressings were applied, kept in place by three many-tailed bandages. On the seventh day, at his own request, he was transferred to another hospital, where his wife, also an air-raid casualty, had been taken. Nearly all the small cuts of the back had healed, leaving five or six of the larger ones a little septic and gaping, the worst being a gash some 1½ in. wide.

He reported again on Oct. 3. The back was then completely healed.

TABLE I.—*Glass*

Description	No.	Remarks	Deaths
Lacerations of face, scalp, and neck ..	77	19 T	—
Perforating wounds of eye	15	5 cases bilateral 2 T	—
Cut hands	9		
Severe multiple lacerations	6	1 T	1
Other injuries	5	—	—

Any patient may appear in two or more tables.

B. Bomb Splinters

A striking feature was the low incidence of penetrating wounds of the body cavities. We did not have a single penetrating wound of the abdomen; and there was only one of the chest—giving rise to a haemopneumothorax. This is excluding two patients with multiple perforations who died a few minutes after admission, the cause of death being unknown, as necropsies were not performed. There were two perforating wounds of the cranium. This contrasts with the injuries of bullets and heavy bomb splinters. I think it is due to the shape of the fragments, which tend to be small flat pieces of metal, often about the size of a halfpenny, or smaller, and the thickness of a sixpenny piece. These disks have a high coefficient of friction and probably a low velocity. The longest track we discovered was some 5 in. through fat and muscle, in the region of the hip, and this patient had been lying within 20 yards of the crater edge.

Occasionally the bomb fragments are large tangled masses of crumpled sheeting, weighing a pound or more, and these may cause very severe injuries. One man hit by such a fragment had his right humerus shattered and some 6 in. of the triceps muscle torn away; another had his thigh nearly severed, with severe comminution of the femur.

Apart from the small splinters at very close range and the massive fragments mentioned above, the bomb splinters did little serious damage. There were six cases of injuries by wood splinters, which were confined to the soft tissues and did not penetrate to any of the body cavities. One patient had a large piece of wood driven between the head of the radius and the ulna in an antero-posterior direction and projecting 5 in. each side of the arm, yet, miraculously, no important structure was damaged.

TABLE II.—*Bomb Splinters (24 Cases)*

Description	No.	Remarks	Deaths
Multiple perforations all over body	2		2
Multiple perforations of face and head	1		1
Abdominal and buttock wounds, not entering peritoneum	3		
Perforating wounds of cranium	1		
Perforating wounds of chest	1		
Fractures { Major	5		
Fractures { Minor	3		
Soft-tissue lacerations	9		
Wood splinters	6	1 T	

C. Masonry

At the beginning of the series these injuries were uncommon. Later they became more frequent as adequate cover was taken, and instead of being killed the victims were buried with varying degrees of trauma. We did not have a single case of crush syndrome with oedema of the injured part, anuria, and uraemia. This is probably due in great measure to the increased speed of the A.R.P. rescue service, and possibly to a lessening in the enthusiasm for intravenous plasma therapy. The injuries tended to be severe, and there was a proportionately high death rate—9 out of 52.

TABLE III.—*Masonry (52 Cases)*

Description	No. and Remarks	Deaths
Fractures of limbs and pelvis	23 (16 severe; 7 minor) 1 T	3
Fractures of skull	7	6
Dislocations:		
Hips	1	
Tarsus	1	
Shoulder	2 2 T	
Lung injury	1 (with surgical emphysema and haemoptysis)	
Bruising	17 3 T	

D. Blast

(*a*) *Affecting the Lungs.*—It was difficult to estimate the number of patients whose lungs were affected by blast and to assess the relative damage caused by blast in contradistinction to the other agents. Three patients, however, presented a clear syndrome not confused by other lesions. They had severe pain in the chest, breathlessness, and traces of blood in the sputum, without any visible lesion of the bony cage in the radiograph. One of these died, and he provides the one certainty.

This man had been repairing a cinema roof when a bomb fell about 100 yards away. He lay down on the tiles, but the left side of his body caught the full force of the blast. On admission he was concussed and irrational; he appeared to be drunk. Later he was taken to the theatre for repair of a facial gash made by flying slate. His confusion increased after the operation, and he died two days later with signs of consolidation of the left lung. At necropsy he was discovered to have: (i) a gross contusion of the left side of the brain; (ii) a gross contusion of the left lung; (iii) a small split in the capsule of the spleen, with a little free blood in the abdomen; (iv) a haematoma over the lateral side of the left femur. Microscopy showed blood cells among the brain tissue and blood cells in most of the alveoli of the left lung. Many of the alveolar walls were torn.

(*b*) *Affecting the Eyes.*—Again it is difficult to decide on the exact part played by blast in eye injuries. From personal experience of a flying bomb at 400 yards in the open, when lying down, there were a few seconds of smarting and a feeling of pressure on the eyes, comparable to that of the impact when diving 10 ft. into water. There were four hyphaemias, which were not explicable except as the result of blast; in other cases the cause was obscured by the presence of dirt, debris, or perforating wounds of the globe.

(*c*) *Affecting the Brain.*—Once more there was great difficulty in deciding whether blast had been the sole agent, but the cases recorded in Table IV almost certainly were due to blast alone.

TABLE IV.—*Blast Injuries (26 Cases)*

Description	No.	Remarks	Deaths
Eyes:			
Hyphaemia	4		
Injured iris	2		
Subconjunctival haemorrhage	3		
Contusions	2		
Lungs	6	1 T	
Cerebral concussion	4		
Cerebral contusion	3	Two cases had blood in C.S.F. One had free blood cells in brain tissue (see above). One had sudden paralysis of left arm	2
Severe bruising	2		

E. Burns

The number of burns (9) in the series was low (Table V). All these burns appeared to be of partial skin thickness, but it is impossible to tell accurately until they are five days old, owing to tissue coagulation due to heat. Of the three with more than half the body involved, one died shortly after admission and the other two were convoyed a few days later. They were treated initially for shock by fluids, plasma, morphine, etc., and then subjected to a quick clean in the theatre with cetab or half-strength dettol (depending upon the surgeon), taking care not to spend at the outside more than 10 minutes over the toilet. The areas were then dressed with sulphanilamide powder and tulle gras or vaselined gauze roll. The use of any agent which obscures the future view of the wound is unsound. When the dressings required changing the patient was put in a normal-saline bath and the dressings soaked off. The final results, so far as we have been able to determine, have been quite satisfactory.

TABLE V.—*Burns (9 Cases)*

Description	No.	Deaths
Extensive partial-skin-thickness burns of body	6	1 died a few minutes after admission
Burns of hands and arms	2	
Burns of face	1	

GROUP 2: NON-SURGICAL CASES

These fell into five categories:

A.—Cases transferred from other hospitals and requiring food, clothes, and a wash.

B.—These were cases of the crippled and infirm who could not be dealt with by a rest centre. We had several paraplegics, diabetics, etc. In all there were 15 in this category.

C. *Hysteria, Fear, and Other Psychological States.*—Some of these cases were interesting. A man was admitted who had been about 100 yards away from a bomb. For some hours afterwards he continued his work (heavy rescue) and then collapsed and began to count "one, two, three, four, five, six" over and over again. He was quite rational, and complained bitterly of the compulsion to count. He was given a sedative, and next morning appeared to be normal. Another man was admitted in an extreme state of acute fear, with grossly dilated pupils which did not respond to light. We had a second case of paralysis of the pupillary constrictor mechanism through chronic fear:

An intelligent woman (aged 24) was admitted with widely dilated pupils; the right was quite irresponsive to light, and the left contracted only very slightly. There was also marked sweating. In a few days the left eye had improved a little. She was sent away from the bombing to the country, but even then took about six weeks to make a full recovery.

One woman in an acute anxiety state required heavy doses of paraldehyde to keep her at all manageable.

In Table VI it will be seen that I have used the terms "psychological" and "surgical" shock. Psychological shock was a term we coined to cover hysteria, fright, and mental upset requiring only rest and reassurance. Surgical shock was used for patients who had had some physical injury and whose pulse or blood pressure had been affected but who did not need theatre treatment.

D. *Dust.*—Two organs were affected by this agent. Corneal abrasions were very common—so common that they were reported in the notes only if they were severe. The 17 cases in Table VII therefore represent only the more serious lesions. As a routine, any affected eye was irrigated with boric acid, and sulphacetamide drops, 30%, were instilled. Some received atropine drops, 1%, in addition. The respiratory system also suffered from the effects of dust. At operation the anaesthetist remarked time and time again on the dirt in the pharynx and trachea. Unfortunately no record was kept of these cases, but standing out in my memory are two in which the inside of the trachea was quite black and dry with caked dust. Both patients died a few hours later; one almost certainly through the respiratory condition. Of the cases in which the dust lesion was the main injury, in one a severe cough developed in a young healthy male, and he was too ill to convoy for several days. In another the dust inhalation precipitated a severe asthmatic attack. I happened to mention these two cases to an

air-raid warden, who told me that several of the dead found by his rescue party had been suffocated by dust—the mouth, nose, and throat being completely blocked, while no other injuries were visible.

E. *Oil.*—The last physical agent we encountered was oil, and the only problem was to clean the victim up in the midst of a heavy rush of casualties. The gas-decontamination chamber provided a satisfactory answer.

TABLE VI.—*Non-surgical (132 Cases)*

Description	No.	Remarks	Deaths
Chronic sick transferred from other hospitals	32		
Crippled and infirm	15		
Psychological shock	39	4 T	
Surgical shock	28		
Dust:			
Corneal abrasions	17		
Respiratory tract	4	Eyes affected as well	1
Oil	1		

Conclusion

An attempt is made to review 259 air-raid casualties admitted to an E.M.S. hospital in the recent flying-bomb attacks and to analyse the types of injuries and the agents which caused them. I include three further tables to aid the analysis.

TABLE VII.—*Eye Injuries (52 Cases)*

Agent	No. and Description	Deaths
Glass	20 eyes with perforating wounds 1 conjunctival abrasion. (2 T)	1
Dust*	17 corneal abrasions and conjunctivitis	
Blast	1 traumatic iritis 1 ruptured iris 2 contusions 3 subconjunctival haemorrhage 4 hyphaemia	
Bomb splinter	1 perforating wound of globe	
Fear	2 cases of acute dilatation of the pupils, which did not contract to light	

* It is probable that many of these lesions were due to blast and that the presence of dust was coincidental. In several cases the corneal and scleral epithelium had been wiped off, leaving a denuded circular area of varying diameter, the largest about half an inch.

TABLE VIII.—*Fractures (39 Cases)*

Agent	No. and Description	Deaths
Masonry	23 (mostly severe fractures), 1 T	3
Glass	4 minor fractures	
Bomb fragments	5 severe 3 minor	1
Cause unknown	4	

TABLE IX.—*Head Injuries (23 Cases)*

Agent	No. and Description	Deaths
Masonry	7 cranial fractures 1 cerebral irritation (blood in C.S.F.) 1 unconscious	6
Blast	1 paralysis of left arm 1 partial paralysis of left arm 1 mental confusion 3 contusions 4 concussions	
Cause unknown	1 unconscious 1 contusion 1 concussed (4 hours' retrograde amnesia)	1
Bomb splinter	1 lodged in frontal lobe (now convalescent)	

Guidance to local authorities in England and Wales as to the lines on which proposals to provide temporary housing should be framed is given in a memorandum entitled *Temporary Accommodation* by the Ministry of Health and the Ministry of Works (H.M. Stationery Office; 6d.). This matter, it says, should not be considered in isolation but in relation to the whole housing programme of the authority. The use of temporary accommodation will, the Government believes, make it possible approximately to double the number of dwellings which could otherwise be provided with the limited amount of skilled labour available in the first year after building can be resumed. The temporary scheme must not be allowed to stand in the way of the permanent scheme, and it will be for each authority to whom temporary houses are allotted to ensure that both sections of its programme can proceed side by side without stultifying one another. Temporary houses will be provided and owned by the Government; they will be erected on sites acquired and developed by the local authority.

MASSIVE SURGICAL EMPHYSEMA DURING THE COURSE OF GENERAL ANAESTHESIA

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Surgical emphysema occurring during the course of endotracheal anaesthesia has been the subject of several reports in the literature, and much experimental work has been carried out to ascertain the cause of the phenomenon. The first mention of the subject was made in 1912 by Woolsey, who reported one case of surgical emphysema. Luke in 1913 recorded a case of gross emphysema due to obstruction of the return airway, and Georg in 1917 suggested that surgical emphysema was likely to occur if the tracheal mucosa had been traumatized during intubation. He also demonstrated the occurrence of emphysema in dogs after the use of insufflation pressures of 25 to 33 mm. Hg. Marcotte *et al.* (1940) found that an intrabronchial pressure of 24 mm. Hg usually produced mediastinal emphysema in dogs, and had seen it occur after 18 mm. In cats, lower pressures of 16 to 20 mm. Hg were sufficient to produce emphysema. Macklin (1937), by the use of very high intrabronchial pressures in experimental animals, has demonstrated exactly how such emphysema could occur in the lungs and mediastinum. He showed that air could break through in small bubbles from overdistended alveoli to the perivascular connective tissue and could track along the course of the arterioles to the great vessels.

We would like to submit the histories of two cases of massive surgical emphysema that have occurred during endotracheal anaesthesia.

Case I

A girl aged 9½ years was admitted to hospital with a diagnosis of acute appendicitis. The illness had started with generalized abdominal pain about 52 hours previously, and for the last 12 hours this had been localized to the right iliac fossa. The child had vomited on several occasions in the early stage of the illness, when a mild gastro-intestinal upset was considered probable: a dose of castor oil had been administered by the doctor in charge of the case, and the pain subsequently became localized to the right iliac fossa. When she was brought to hospital the signs and symptoms all pointed to a diagnosis of acute appendicitis, with some evidence of local peritonitis. The tongue was dry and dirty; the temperature was 101.4° F., and the pulse varied from 140 to 160 a minute. The only other abnormal physical sign was a loud systolic murmur, which was conducted well into the axilla. The heart was not enlarged. An immediate operation was advised.

Operation.—A preliminary injection of atropine sulphate gr. 1/150 was given and anaesthesia induced with gas, oxygen, and ether by means of a Clover's apparatus. The abdomen was opened by a modified Battle's incision and a large gangrenous appendix was removed without difficulty. The inflammation appeared to be well localized to the right iliac fossa. As the abdomen was being closed convulsive twitchings developed which rapidly became generalized. In an effort to deal with the situation the Clover's apparatus was discarded, and an intratracheal tube was passed with a laryngoscope, and through this tube oxygen containing a small amount of CO_2 was liberally administered. Almost immediately the anaesthetist noticed surgical emphysema of the eyelids. The condition spread with great rapidity over the face, neck, arms, chest, and abdomen. The oxygen was shut off at once and artificial respiration started, as the condition of the patient was now desperate. The convulsions continued, and death occurred within about five minutes of the first seizure. At the time of death the patient was quite unrecognizable as a human being. The features were so completely changed by massive emphysema that the eyes could scarcely be distinguished from the nose and mouth: the neck merged directly into the chin. The appearance was reminiscent of a toy balloon made to represent some animal which had been overdistended. The emphysema extended from the head to the legs. In order to improve these unpleasant appearances an attempt, after death, was made, on the operating table, to deflate the tissues by means of multiple small incisions down to the deep fascia, but no air could be expelled.

At the necropsy a tiny abrasion of the pharyngeal mucosa was discovered. The emphysema involved the glottis as well as the whole pharynx, the mediastinum, and the subcutaneous tissues. It was

evident that, apart from the convulsions, which in this case were probably the actual cause of death, the patient had suffered from acute laryngeal obstruction.

The striking features of this case, which occurred in 1934, were the speed with which the emphysema developed and the fact that by the time it was first noticed it was already too late to do much about it, and that the emphysema appeared after the introduction of an endotracheal tube. The whole operation was completed in less than 20 minutes, and the anaesthetic was administered by an experienced anaesthetist.

Case II

A coloured boy aged 11 years was admitted to hospital with a diagnosis of "bronchiectasis—for investigation," with a view to surgical treatment of the condition. He had suffered from a cough with foul sputum for some years as well as frequent colds of long duration, and two febrile attacks of more severity which were thought to be bronchopneumonia. On admission he was of average size for his age, with early clubbing of the fingers. Clinical examination of the chest revealed showers of rales over the right lung and occasional rhonchi. He expectorated daily 4 oz. of foul-smelling sputum. The plain radiograph suggested a cystic bronchiectasis in three lobes of the right lung.

In view of the foul sputum, postural drainage was carried out for several weeks, before attempting bronchography, in an endeavour to clear the bronchial tree. When it was finally decided to carry out the examination the sputum had been reduced to 1 oz. daily. His age and temperament were considered to be unsuitable for successful bronchography under local analgesia, and so a general anaesthetic was given.

On Feb. 22, 1944, he was given morphine gr. 1/12 and atropine sulphate gr. 1/100 as premedication. The child was then anaesthetized with $CHCl_3$ and oxygen. The induction was not uneventful—sputum proving troublesome and cyanosis difficult to eliminate. A Magill endotracheal tube was therefore passed under direct vision and the anaesthetic continued. Cyanosis was still prominent, and on one occasion the pulse faded; oxygen was liberally administered in an attempt to combat this. About 15 minutes after the induction the anaesthetist considered the patient to be more or less settled, and as the cyanosis had improved he felt that the bronchogram could now be made. It was, however, plain that the condition of the patient was not altogether satisfactory. It had been our recent custom in small children receiving a general anaesthetic for bronchography to inject the lipiodol through a fine Monaldi catheter inserted into the lumen of the endotracheal tube. This catheter was so small that, while allowing a flow of lipiodol, it encroached but little upon the airway. This method has not caused us any anxiety. At the moment when the oil was about to be instilled it was noticed that the child's neck was grossly deformed, there being complete loss of the angle between the chin and the neck, and that the neck was alarmingly ballooned right down to the clavicles. Palpation suggested deep emphysema, little or no subcutaneous emphysema being observed. The child was again cyanotic; the $CHCl_3$ was discontinued at once and the oxygen flow increased. A serum needle, which was fortunately lying on the bronchography trolley, was inserted into the left side of the neck about two fingerbreadths above the clavicle. No diminution in the size of the neck occurred, and the child's condition appeared to be critical. A 20-c.cm. Record syringe was then applied to the needle, but the absolute resistance of the plunger to withdrawal suggested that the needle-point had not reached an air-containing fascial space. The needle was then inserted more deeply until the plunger could be withdrawn with ease. Aspiration was started, the thumb being placed over the hilt on disconnecting the syringe. During the first minute or so there did not seem to be an appreciable reduction in size, but as the plunger's easy withdrawal suggested the continual aspiration of air, the process was continued and the swelling began to recede. At this point a two-way adapter had been procured: the reduction was then more rapid and the aspiration on a better basis. When the contour of the neck seemed almost normal and the condition of the patient much improved, the syringe was disconnected, but the needle was left *in situ*. Within a few seconds the neck ballooned up once again. The process of aspiration was repeated, and the neck returned to reasonable dimensions once more. On disconnecting the syringe a further ballooning occurred. Again aspiration was performed for a period of about 15 minutes, and on this occasion on disconnecting the syringe ballooning did not recur. The oxygen administered in this last 15-minute period was appreciably reduced in amount. It has been estimated that, in all, aspiration was carried out for a full half-hour. While waiting to ensure that no further gross emphysema occurred a radiograph was taken, as the child had been anaesthetized in the *x*-ray room. The radiograph shows the needle *in situ* and emphysema to be present in the neck—although the neck appeared normal to palpation.

The child made an uneventful recovery from this operation with no further treatment; but a full course of sulphathiazole was given as a precaution against infection of the fascial planes in view of the foul expectoration.

On examination of the anaesthetic apparatus it was apparent that the expiratory valve was not working at the maximum of efficiency and that the pressure of gases in the pharynx must have been unduly high. The anaesthetic was administered by an anaesthetist of skill and experience in the procedure.

Summary and Conclusions

Two cases of massive surgical emphysema which occurred during the administration of general anaesthesia are recorded. The common features are: the rapid onset of the condition; the alarming rate of spread; and that in both cases oxygen was liberally administered to combat an emergency—convulsions in one and cyanosis in the other. It is suggested that incision or the mere insertion of needles into the superficial tissues is not sufficient to control the emphysema, and that aspiration is necessary; that if the cause remains the emphysema returns with alarming rapidity when aspiration of air is discontinued. Finally, if aspiration is attempted the needle may have to be passed through the deep fascia of the neck.

In both these cases it is probable that the condition was caused by a minute perforation of the pharyngeal mucosa, through which gas, under pressure, was forced into the fascial planes of the neck and mediastinum. It is therefore conceivable that, once such a process has been started, it might continue, even after the primary cause has been removed, if the patient develops an obstruction to the airway and struggles for breath.

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AN UNUSUAL CASE OF GENERALIZED TUBERCULOSIS

BY

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The following case of generalized tuberculosis seems to us to be well worth recording.

Case History

An American seaman aged 26 was suddenly taken ill on Nov. 22, 1943, complaining of headache and chills. He ran a continuous fever from the onset to his death in March, 1944. During the course of the illness, which was difficult to diagnose, he developed erythema nodosum. The interest of the case is in the *x*-ray and post-mortem findings, which are as follows:

Summary of X-Ray Reports.—23/12/43:—Marked increase in left hilar shadow, continuous with a fan-shaped opacity spreading into left mid-lung zone; consistent with a localized area of consolidation and associated glandular enlargement. 30/12/43:—No appreciable change. 14/1/44:—Increase in size of opacity in left hilum and mid-lung zone; consistent with tuberculous infiltration and glandular enlargement of the type usually seen in children. 20/1/44:—Increase in the spread. 9/2/44:—Increase in size and density, associated with widening of the mediastinum. The possibility of lymphadenoma or neoplasm, with secondary lung involvement, cannot be excluded. 21/2/44:—Slight increase of the glandular enlargement to the right of the midline.

Post-mortem Examination.—Lungs:—There was approximately half a pint of deep-yellow fluid in the left pleural cavity. There were adhesions at the base on the left side, and a large breaking-down caseous peribronchial lymph gland in the left side of the mediastinum approximately the size of a tangerine. The lower lobe of the left lung was solid, very little caseation being apparent. There were some scattered tubercles throughout the rest of the left lung and also the right lung. The condition in the left lower lobe seemed to be a direct spread from the affected peribronchial gland. Trachea and bronchi were not involved in the disease process. *Heart:*—There was a large amount of fibrinous pericarditis. Numerous tubercles (up to 1/4 in. in diameter) were present in the pericardium: these did not extend into the myocardium. However, a solitary tubercle (approximately 1/2 in. in diameter) was found in the myocardium of the right ventricle. There was healthy myocardium between this tubercle and the pericardium. The valves were normal

in appearance, as were the aorta and coronary arteries. The *liver* was enlarged, and was the seat of many tubercles. These varied in size from 1/4 in. to 1/2 in., and showed a surprising lack of caseation. They were in several cases surrounded by necrotic liver tissue and there was little or no fibrosis around the tubercles. The *spleen* was enlarged to about four times the normal size and was congested. Here again were seen many tubercles similar in size and appearance to those in the liver. There was a fibrinous perisplenitis. The *kidneys* showed several small tubercles scattered through the organs. The *pancreas* appeared normal, though there was an enlarged semi-caseous lymph gland near the head. The *suprarenals* were normal. The *oesophagus*, *stomach*, and *intestines* were also normal in appearance. There was little free fluid in the abdominal cavity, and only an occasional small tubercle was present in the peritoneum.

Microscopical Examination.—Smears taken from the peribronchial lymph gland and from a tubercle in the liver showed acid alcohol-fast bacilli. Sections of the tubercle in the myocardium revealed a central area of early caseation, surrounded by endothelioid cells, histiocytes, and small round cells. Scanty giant cells of the Langhans type were present. Acid alcohol-fast bacilli were also found.

Comments

The heart and pericardium are seldom involved in miliary tuberculosis, and although solitary tubercles in the myocardium have been described, they are quite exceptional. Tuberculosis of the pericardium is not uncommon, and is due in most cases to a backward infection by the lymphatics from a tuberculous gland. To quote *Muir's Pathology* (4th edition, 1940): "At an early stage tubercles are formed, but these soon lead to inflammatory reaction and become covered with fibrin. The disease may thus appear like an ordinary fibrinous pericarditis, and its real nature may be discovered only on microscopical examination." In this case, however, there were, as already described, many large and very obvious tubercles. The lesion in the myocardium (1/2 in. in diameter) was discrete and presumably blood-borne, as no connexion between it and the pericardium could be traced either macroscopically or microscopically. The condition in the liver, too, is very rare. To quote the above author again: "The presence of large almost tumour-like tuberculous masses in the liver has been recorded in a few cases, but the occurrence is very rare."

The disease in this case would appear to have been a blood-stream infection with a ? primary focus in the peribronchial lymph gland. The size of the tubercles and the absence of macroscopic caseation in the tubercles in the various affected organs argue a comparatively high resistance on the part of the patient, and in some way account for the lack of clinical signs which, until within a few weeks of his death, consisted merely of a persistent pyrexia and the early erythema nodosum.

We wish to thank Col. W. D. Arthur, M.B.E., and Lieut.-Col. W. L. Ackerman for their help and permission to forward this paper.

Medical Memoranda

Local Analgesia for Adult Circumcision

No claims for originality are made when a technique of local block for adult circumcision is described; but at the same time the textbooks do not stress this method as being a technique of choice for this operation. Under certain conditions it is definitely the most satisfactory anaesthesia. If a general anaesthetic is employed circumcision in the adult demands a much deeper level of anaesthesia than is often realized. For instance, a "shot of pentothal" will not do; a large dose of this barbiturate is not sufficient in most cases. The advantages claimed for local block are speed for the surgeon in the organization of a clinic, a high degree of haemostasis, and the use of a very small quantity of an inexpensive fluid. And the patient is not subjected to the risks of a general anaesthetic, small though these are.

Recently, local block for adult circumcision was carried out in 41 cases at a military hospital in India, on British and Indian troops. The cases were largely drawn from the venereal disease department, but there were cases of non-venereal balanitis and phimosis also. During this series, admittedly small, no other technique was used, although there were slight variations in the method. Sepsis was not considered to be a contra-indication, and a few of the cases were in such a condition that the operation was confined to a "dorsal slit."

Of course the soldier is the ideal subject for all forms of block analgesia, provided that they are successful. Reports of incomplete anaesthesia and the consequent suffering very quickly spread round a ward. Patients then arrive at the theatre in the worst possible state of anxiety for a local. Therefore as soon as any pain is felt it is essential for something to be done, and the best is a very light inhalation, open ether being satisfactory. One case in this series was so treated, and the confidence of the wards was not upset.

The patients were sent to the theatre at the same time, and were anaesthetized in a batch if the number on the list did not exceed four. One patient was circumcised after a lapse of an hour, and there was no falling off in the standard of analgesia. The question of premedication is simple in these cases. From this series it was decided that, whether morphine was given or not, the results were the same as regards the analgesia, but a greater tranquillity of mind was present in the premedicated. But we were dealing with trained soldiers, and it is suggested that in the case of a civil clinic all cases be premedicated. In order to cut down the number of stretcher-bearers which would be required—since the ward which provided these cases was a long distance from the theatre—the patients walked to the anaesthetic room. At the beginning of the series all cases were given morphine gr. 1/3 intravenously on arrival. Then the local analgesic was injected, novutox being the agent, and the dose within the limits of 6 to 8 c.cm. A 10-c.cm. syringe fitted with a hypodermic needle was used. The first injection was made into the base of the penis on the dorsal surface in the midline, and the area on each side of this puncture was infiltrated as far as the lateral border of the organ. Approximately 4 c.cm. of agent would be used over this area. A second puncture was then made into the ventral surface in the midline, and this area was similarly infiltrated to meet the lateral boundaries of the first injection. Less solution would be required here, since the previous infiltration had included the lateral borders. But before the needle was removed at least 1.5 c.cm. was inserted into the midline of the ventral surface. This was most important, as in any case of imperfect anaesthesia the frenum is the sensitive structure. After the infiltration was completed a period of at least ten minutes was allowed to elapse before the operation was started. When premedication was abandoned, about half-way through the series, the patients were allowed to walk back to the ward, accompanied by an orderly, and every one arrived there none the worse for the experience.

It has been suggested that the efficient haemostasis provided by the local block might lead to post-operative haemorrhage; this did not happen. No doubt the haemostasis is produced by the mechanical compression of the vessels by the ring of swelling resulting from the infiltration. There were no ill effects.

I am indebted to Major J. D. Wilson, R.A.M.C., surgical specialist to the hospital where these cases were treated, for his interest and co-operation in the anaesthesia.

H. L. ROGERSON, M.R.C.S., L.R.C.P.,
Major, R.A.M.C.

A Case of Sensitiveness to Strychnine

The following record seems worthy of publication not only for its rarity but for the moral lesson it affords.

CASE REPORT

A married woman aged 42 came under my care in a busy panel practice recently, already certified as unfit for work on account of rheumatism, of which there was no objective evidence. Thinking that aperient treatment might be of value, I prescribed a bottle of mist. casc. co. Next day I was summoned urgently, to find that after one dose of the new medicine the patient had collapsed, and was pale and pulseless. No definite diagnosis occurred to me, although I toyed with the idea of belladonna poisoning in an aberrant form, since, as some may know, the mist. casc. co. of the 1943 *Formulary* contains the astonishing amount of 12½ minims of the tincture to the dose, whereas the 1939 mist. casc. co. contains only 3 minims, as I found on looking it up.

After some weeks of treatment with iron the patient asked for a tonic, intending to return to work. I prescribed the mist. phosp. c strych., of which the patient warily took only a teaspoonful and within a few minutes suffered a similar though not so severe attack. On my arrival in haste I had to defend myself against accusations of poisoning. Since the only item common to the two mixtures is strychnine, I was forced to the conclusion that this must be the cause of the attacks, and at the request of the patient obtained another opinion. My colleague rather sceptically injected intradermally 0.05 c.cm. of liq. strych., which caused an immediate wheal followed in a minute or two by a typical anaphylactic attack, which required the injection of adrenaline.

I have now equipped the patient with a written note to be shown to any future doctor. Inquiry among friends and chemists of wide experience has not brought to light a similar case.

D. R. C. SHEPHERD, M.R.C.P.

Reviews

A STUDY OF NATIONAL HEALTH INSURANCE

National Health Insurance. A Critical Study. National Institute of Economic and Social Research. Economic and Social Studies, IV. By Hermann Levy. (Pp. 366. 18s.) Cambridge University Press. 1944.

This is a searching examination of our National Health Insurance system by a staunch believer in the principle of health insurance who has a remarkable acquaintance with the working of similar systems in other countries. It is fully documented. Prof. Hermann Levy characterizes our system as "costly, wasteful, and overlapping," and ascribes these defects chiefly to the admission of the approved societies to such a prominent place in its administration. The price paid for their support, which apparently for political reasons could not be avoided, was that it entailed a flat rate of contribution. If an adequate range of medical benefit had been made available, a flat rate would have been actuarially impossible. Its effect was "levelling down the statutory benefits to cover only the average basic incidence of sickness—the lowest common factor." Continental systems which adopted the method of aggregation of contributors into regional and occupational groups, with elasticity in contributions and in benefits in accordance with the risks involved, have been able to give a much wider range of medical benefit. Our "Additional Benefits" he considers to have failed lamentably to fill the serious gaps left in normal medical benefit; and as a consequence "medical benefit is bolstered up by charity and voluntary effort." Medical benefit, in his opinion, plays the vital part in any health insurance scheme. "The more effective the scheme is medically, in physical terms, the less costly it would be financially in terms of cash." He condemns the inequalities imposed upon contributors, for "it is contrary to conditions of purchase and sale that for the same contribution one purchaser may receive less than another." By eliminating the approved societies and grouping contributors in regional and occupational groups, he claims, and gives good reasons for his belief, that we should save (*a*) in administrative expenses, (*b*) by shortening the duration of sickness through more efficient treatment, (*c*) by the change from the piling up of actuarial reserves to a yearly assessment of probable liabilities with any consequential alteration of contribution, and (*d*) by making the Workmen's Compensation responsible for the cost of treatment for injured workmen.

Prof. Levy quotes freely the B.M.A. and other critics of our system, but is of the opinion that they have missed the fundamental defects to which he calls attention. He thinks that the doctors are underpaid and that the method of payment is unsatisfactory. He favours a system of payment by attendance, but on this point he is far from definite. He mentions with approval the abandoned Manchester and Salford system of payment, but either does not know, or does not give sufficient weight to, the reasons which led to its abandonment. He has no use for the salaried doctor, and says, "There is no reason to suppose that a State doctor practising for a number of insured persons would be the ideal solution."

In his last chapter the author says the book was written before the Beveridge report (to which he pays generous tribute) was published; but in spite of the glowing prospects held out by that report he does not favour any system which depends on a flat rate of contribution. He ends by saying that the Government will have to decide between (*a*) a centralized plan with fundamental assumptions and financial implications which are difficult to foreshadow, and (*b*) one working on clearly assessable risks to be met by integrated local and occupational funds and with variable contributions. He thinks it would be better to organize our system "not from the roof but from the ground." Whatever may happen to the proposed comprehensive health service, the author can congratulate himself on a sound piece of constructive criticism and on having drawn attention to many defects in our present system which ought to have great weight in contemplating a new one.

MAN, SOCIETY, AND RELIGION

Man, Society and Religion. An Essay in Bridge-building. By W. Russell Brain, D.M., F.R.C.P. The Swarthmore Lecture, 1944. (Pp. 77. 3s. 6d. cloth covers; 2s. 6d. paper covers.) Published for the Woodbrooke Extension Committee by George Allen and Unwin.

This is a Swarthmore Lecture and so is necessarily concerned with the Quaker attitude. All may not share this point of view, too many do not understand it, but few can withhold admiration for the steadfastness and high motives of the Society of Friends. The "text" for the lecture is, "We are members one of another," and here members are not the loose associates of a club but limbs of a body without each of which and without the contribution of each the body cannot function properly. We are each responsible to all. Like the cells of a multicellular organism the individual is essential to the group. It is the business of psychology to guide the interactions of the individual and to define how they may best contribute to the group mind. All too little is known about this, but increased knowledge is essential for the progress of mankind. Altruism does seem to be a natural function of man, but it requires direction. The Quakers have done much as pioneers to direct this altruism, and the story of social progress in the last century has shown how it is gradually leavening the masses; but the possibility and the realities of war show that the bounds of altruism are still far too narrow. Suttie has pointed out that the infant requires to give as well as to take, and so does every adult. Individual independence, so much lauded by the generation responsible for the consequences of the industrial revolution, is really quite impossible, and social security must ultimately be based on the recognition of the essential interdependence of all individuals and all classes of society.

So with international security. Force cannot ultimately succeed unless all nations agree to be subject to discipline, as the majority of the citizens of this country agree to be subject to the discipline of the law and the police. Aggression will not be curbed until peoples no longer want to be aggressive. This, as most people know, is the Quaker ideal. After a discussion of the Quaker form of worship Dr. Russell Brain points out the need for revaluing and revitalizing the inner subjective world which science has done so much to discredit and repress. We must recognize the importance of the "inner light in the modern world," and no profession can turn its mind to this conception with greater advantage than can the medical profession, apparently so engaged with the practical scientific aspects of life yet drawing its inspiration from that inner force of altruism and love. We as doctors cannot, therefore, but be grateful for this charmingly written study, so provocative of thought, by a distinguished member of our own profession.

ELEMENTS OF ANATOMY AND PHYSIOLOGY

Elementary Anatomy and Physiology. By James Whillis, M.D., M.S., F.R.C.S. Foreword by T. B. Johnston, M.D. Second edition. (Pp. 280; illustrated. 15s.) London: J. and A. Churchill. 1944.

Anatomy and Physiology for Students of Physiotherapy, Occupational Therapy and Gymnastics. By C. F. V. Smout, M.D., and R. J. S. McDowall, M.D. (Pp. 418; illustrated. 30s.) London: Edward Arnold and Co.

Elementary Anatomy and Physiology by James Whillis, first published in 1938, has now reached a second edition. This, which follows the lines of the first edition, aims at presenting the facts of anatomy and physiology in "broad outline," and is published within the compass of a single volume of 280 pages. The succinctness of the first edition has been maintained in the second, notwithstanding additions, such as examples, with special illustrations, of the action of certain groups of muscles in co-operation with controlling groups of opposing muscles which regulate the action of the primary group—e.g., walking, or standing on one foot. Some sections have been revised and some rewritten, more particularly those dealing with digestion, metabolism, and vitamins. Owing to the limited size of the book the description of some organs and physiological processes may seem to have been curtailed too drastically. By reason of the lack of illustrations showing the histological structure of such organs as the internal secretory glands, and the omission of many of the chemical formulae which form the basis of the organic chemistry concerned in digestion and metabolism, beginners may find difficulty in fully understanding and picturing for themselves the objects and the processes described in the text. The illustrations on the whole

are good, but some are apt to give a false impression because there is no delineation of structural texture. Thus some give no indication of muscle fibres, the muscular tissue being left white while the glistening white tendons are represented black. Considered as a whole the author has succeeded in packing a large amount of essential information into a small space, and the book contains much that the type of student for which it is written should know.

Anatomy and Physiology for Students of Physiotherapy, Occupational Therapy and Gymnastics has been written by Dr. C. F. V. Smout, University of Birmingham, and Prof. R. J. S. McDowall, University of London, King's College, to supply a textbook of moderate size, the scope of which will correspond to the syllabus drawn up by the Chartered Society of Massage and Medical Gymnastics—now called the Chartered Society of Physiotherapy. The anatomical section occupies about three-quarters of the book, while the physiological section is comprised in an excellent epitome of this subject occupying rather less than 100 pages. The text is clearly written, and the illustrations, many of which are coloured, are well adapted for the use of students who in general have no opportunity of dissecting for themselves the regions depicted. In a book specially designed for people who will be engaged in treating muscular defects, and deformities such as wry-neck, scoliosis, and kyphosis, one would expect the relations of the muscular attachments to the movements that take place at the joints concerned to be considered in greater detail; one finds, however, that with few exceptions the actions of muscles with respect to leverage, fixation points, axes of rotation, angular movements, and the planes in which gliding movements can occur receive scant attention. This is particularly the case in the description of the action of the sternomastoid muscle and the muscles at the back of the neck, the action of which, in co-operation with the muscles of the suboccipital region, is not mentioned. Nor are the occipito-atlantal and atlanto-axoidean joints specially described. There are also too many mistakes belonging to the categories of incorrect labelling, misprints, omissions, and errors arising from too diagrammatic illustrations. These defects can, however, be corrected in reprints or later editions, and the book may be recommended as giving a good elementary knowledge of anatomy and physiology such as is required by the above-mentioned syllabus.

Notes on Books

Aids to Theatre Technique is a member of the Aids Series written for the nurse in training (Baillière, Tindall and Cox; 4s.). By covering the syllabus of the General Nursing Council this series constitutes a textbook of nursing, but the present book, by MARJORIE HOUGHTON and MARGARET HARDING, is complete in itself and should be a valuable guide to anyone called on to undertake the work of a theatre sister. It is a product of University College Hospital, and it is pleasing to note the reference to the names of past distinguished members of its surgical staff such as Victor Horsley and Wilfred Trotter. The text is clear and concise and the illustrations are good, the many and excellent photographs constituting one of its most attractive features. A few errors are noticeable; thus all Moynihan's forceps had circular ring handles, Halsted (p. 237) is spelt incorrectly, likewise Morison (p. 240). Proof-reading has not been all that it might have been; two misprints occur on page 190 alone, and the index is incomplete. Kocher's thyroid enucleator is so called in one place and in another illustrated as Kocher's plain enucleator. This instrument is, we believe, usually known as Kocher's dissector. The authors and publishers, however, are to be congratulated on producing, particularly at the present time, such a well-illustrated and attractive little volume at such a low price. It should prove very popular with the nurse in training.

Volume LXIII of the *Transactions of the Ophthalmological Society of the United Kingdom* covers the session 1943 and is published by J and A. Churchill at 40s. The contents include papers and discussions at the annual congress, when the main subjects were thyrotoxicosis in relation to ophthalmology and the scientific and clinical aspects of night vision; a report of the joint clinical meeting with the Section of Ophthalmology of the Royal Society of Medicine, with its miscellaneous bill of fare; and a report of the Oxford Ophthalmological Congress, 1943, at which Prof. E. D. Adrian gave the Doyne Memorial Lecture entitled "The Dominance of Vision." The volume also includes transactions of the North of England Ophthalmological Society and of the Irish Ophthalmological Society.

Polinosis, by L. HERRAIZ BALLESTERO and J. VICTOR MONTICELLI, is published in Buenos Aires by Libreria Hachette S.A. According to a foreword by Prof. C. Jiménez Díaz of Madrid, pollen allergy is particularly common in the Argentine Republic. In this monograph on pollinosis, a physician and a botanist report the results of a joint investigation of pollen allergies as they are seen in Argentina. The book is divided into two main sections, of which the first deals with the regional flora (including atmospheric pollen studies), and the second is concerned with clinical manifestations, diagnosis, and graph on pollinosis a physician and a botanist report the results of this is not a general treatise on pollen allergy; it is concerned solely with the problem as it occurs in Argentina. This necessarily sets a limit upon the interest of the work to readers in other countries. The bibliography, which is singularly weak in any but Spanish-language references, gives details of papers to be published by the same authors on findings in particular regions.

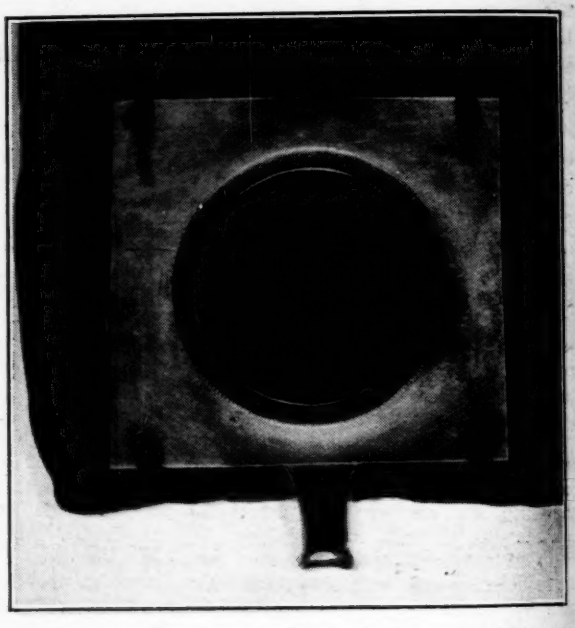
Preparations and Appliances

DEVICE FOR SPHYGMOMANOMETRY IN ANAESTHESIA

Dr. A. OWEN-FLOOD, L.R C.P.I. and L.M., L.R.C.S.I. and L.M. (Crouch End, N.8), writes:

Perhaps I am more unfortunate in my use of adhesive tape than other anaesthetists, but I find it adheres to everything except the patient. The system of attaching the chest-piece of the stethoscope in the conventional position over the cubital fossa by this medium has resulted in my taking the blood pressure of the leg of the operating table, the plaster being unfaithful to the arm as usual.

The illustration shows an "all in one" device for taking pressure by the auscultation method. A plate 2 in. square is cut out to receive a "mica type" chest-piece. The aperture



fits neatly around the thread, and the plate is retained by screwing home the bezel of the chest piece. Convenient holes are drilled in the plate, and it is sewn to the lower angle on the border of the wide part of the fabric containing the inflation bag. The apparatus will thus be applied with the first winding of the inflation cuff, on the medial side of the upper arm over the brachial artery, and will be firmly fixed in position by winding the fabric around in the ordinary manner.

To avoid the trailing of numerous lengths of rubber tubing from the chest-piece to the ear-pieces, and from the inflation bag to the sphygmomanometer, I have connected these tubes by a pair of what is known in the trade as "male and female joints." These joints are routine fittings on the sphygmomanometer of the mercury column type. That connecting the ear-pieces to the chest-piece should be of a calibre not less than 3/16 in.

To use the apparatus all that is necessary is to "plug in" by connecting the joints, and take the pressure in the ordinary manner. This device renders it unnecessary to remove the arm from the side, or otherwise disturb the patient.

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LOCAL GOVERNMENT IN ENGLAND AND WALES

A recent statement in Parliament by Mr. Willink, Minister of Health, reveals that discussions are being held with the associations of local authorities about the structure of local government, and that some measure of reform may soon be introduced. In this connexion it may be recalled that the principles enunciated for health administration by the British Medical Association in 1943, based on the views of the Medical Planning Commission, included the formation of new local bodies covering wide areas and representative of the community served, the local medical profession, and the voluntary hospitals, guided by a local medical advisory committee. These were to be regarded as foundation changes to be agreed before other changes in medical practice were initiated. The White Paper fell far short of this idea. It proposed to combine major local authorities in areas less spacious than the Association had in mind, to give the new bodies executive authority only for hospital and allied medical services, which would be exercised, so far as voluntary hospitals are concerned, by contract and not by integral association, and to make the new authorities responsible for the planning only of all the other health services administered by existing councils. An advisory Local Health Services Council was to be created, but neither the medical profession nor the voluntary hospitals were to have any status on the executive authority itself. This proposal is one of the most serious obstacles to acceptance by the profession of the Government's scheme for a comprehensive medical service. It may therefore be hoped that the White Paper is not the Government's last word on the subject, and that the wider review of local government which is impending will embrace the composition of executive and planning bodies.

It is a melancholy fact that the machinery of local government arouses little public interest. The *Times* of Jan. 6, 1944, published a special article on the subject, with editorial comment. It stimulated little correspondence, restricted to members of local authorities, a Member of Parliament, and the National Association of Local Government Officers, but there were no comments from disinterested observers. The *Times* returned to the subject on Oct. 5, 6, and 7 last, with even less response. Yet its special correspondent put forward a scheme of intermediate planning authorities for all local government purposes which resembles that suggested by the Council of the British Medical Association in the more limited field of public health and medicine, and which might have been thought sufficiently revolutionary to arouse discussion. The scheme envisages a new body compendious in function—i.e., planning and scheme-making—for all local government services which require to be seen from a wider point of view than that of the county or county borough; and federal in composition—i.e., representative of the local authorities and so indirectly of the electorate. It is further suggested that, while the bulk of its membership must be made up of representatives of local authorities, there is room for non-elected members who might be nominated by the central Government.

It must be realized that popular local government is deeply embedded in the British Constitution. It has emerged from the long constitutional struggle of our history firmly entrenched as a bulwark against autocracy, ensuring that freedom of the individual and his voice in affairs which is a guarantee of political stability. A similar system has steered the U.S.A. through the quicksands of phenomenal growth combined with racial problems of the gravest complexity. Countries which have failed in democratic local government and sought authoritarian shortcuts to efficiency in the governmental machine are perishing for lack of an instrument to express the people's will and carry its confidence. But the flight from democracy has not been due merely to antipathy to it: its failure has been the result of weaknesses from which we are not entirely immune—the uncompromising struggle between doctrinarianism and conservatism, the outcropping of nepotism and other forms of corruption, and, above all, inefficiency arising from the love of power and vanity of elected persons who repudiate guidance from anyone but the advisers they choose for themselves. The genesis of Fascism and its nemesis both have their lessons for us.

In the nature of things the forms of democracy can never be final. Problems change, knowledge advances, new services emerge, communications improve, and populations shift. Elsewhere in this issue the structure of local government is described, so that the reader may at least see its outlines clearly. In this country it has been recognized since the Middle Ages that local affairs are a local concern, and that the function of central government is to see not only that they are dealt with but also that some degree of uniformity of policy is maintained. The extent of central control has varied greatly and has been exercised in several ways. In the Middle Ages the Crown nominated the county sheriffs, who in turn appointed the bailiffs of the hundreds and were themselves subject to correction by itinerant justices. In Tudor times the power of the sheriffs gradually passed to justices of the peace, also Crown nominees, removable by the Crown. In the eighteenth century the dismissal of local justices fell into disuse, so that the local magistrates became virtually all-powerful for life in the exercise both of justice and of administration. Standing more or less outside this regime were the chartered boroughs, many of which, by the early years of the nineteenth century, had developed their own peculiar form of corrupt autocracy, and were under little or no central supervision. Alongside this system had grown up a rudimentary form of local democracy in the parish, but it too was largely under the sway of the local justices and exercised its functions as to poor relief, roads, and sanitation by unpaid service. This machinery collapsed in face of the clamant problems of the industrial revolution, and was quickly replaced from

1834 onward by elective bodies, manifold in number, each for a special function and far from conterminous in areas of jurisdiction. The principle was established that local affairs should have local popular management. By the end of the century a further principle had been observed —namely, that local authorities should be compendious, and that, so far as possible, *ad hoc* authorities should be abolished. By the middle of the nineteenth century still another principle had been recognized—that local services such as police, education, etc., which are also of national importance, may be subsidized by the central exchequer, with close supervision of the local service by an appropriate Government Department. This practice has been extensively used to foster the personal health services during the time of their greatest growth throughout the past 40 years. It has never been possible, however, to hold firmly to the implications of those principles within the framework of local government for the time being. For hospitals, water supplies, prevention of river pollution, and many other purposes joint boards have had to be set up which are *ad hoc* authorities only indirectly elective. Other functions, such as factory inspection, some forms of public assistance, main highways, the National Fire Service, the health of cattle, and the supervision of the production of milk, have been, or are being, removed from the scope of local to central administration. The Benthamite code of compendious local administration within convenient, not historical, areas has been the model for much local government change; but it has been half-heartedly applied, and no sooner has it approached realization than circumstances have compelled departure from it. The growing conviction that there is no such thing as an area suitable for every phase of local government, and that, even if there were, it would be so large as to destroy local interest, lies behind the alternative proposal for an intermediate planning body over wider regions, into whose schemes the executive authorities would have to fit their services.

Whatever planning, administrative, or executive bodies may be created, their constitution requires the closest consideration. The principles of democracy demand that the elected representatives of the people should handle their affairs, but it does not follow that all the members of these bodies need be so elected. The numerous Acts of Parliament affecting local government provide for committees, containing non-elected members, to which specific matters stand referred. This is usually effected by co-option, limited as to numbers and optional. The power of co-option does not extend to joint authorities, except under the Cancer Act, 1939, which may never come into force. Co-option to education committees on the nomination of other bodies was provided for by the Education Act, 1921, but this method of adding to the members is not mentioned in the Act of 1944, although teachers still remain exempt from disqualification. An interesting exception to the general rule is contained in the Ministry of Agriculture and Fisheries Act, 1919, which empowers the Minister to appoint up to a third of the members of county agricultural committees. Generally, however, the provision for ensuring knowledgeable membership of authorities and their committees is narrow, and it tends to be grudgingly applied. While the constitutional case against its wide extension may be strong where executive authorities are concerned, these arguments are not valid in relation to planning bodies. Realization that it is unlikely that *ad hoc* executive health authorities, other than joint boards consisting exclusively of local authority members, will meet with acceptance by Parliament, forces us to the conclusion that the Council of the British Medical Association is wise in pressing for a planning intermediate authority on which the profession and the voluntary hospitals will be adequately represented. It is equally necessary that the working committees, at least of executive health authorities, should have an infusion of experienced non-elected members, and that they should be advised by a council truly representative of the medical profession.

MORE ANTISEPTICS FROM PLANTS

The discovery of penicillin has aroused interest not only in antibacterial substances made by other fungi, but in the occurrence of such substances in the plant kingdom generally. The systematic study of other fungi from this point of view has now embraced many hundreds of species, of which a good number have been found to yield antibacterial substances. Some, indeed, produce several: according to Waksman and Geiger[1] *Aspergillus fumigatus* forms no fewer than four. The same substance may come from different fungi: patulin, for instance, now discredited as a cure for the common cold, is by no means unique, but a product of a number of moulds. Such substances have been given various names before their identity has been demonstrated: patulin itself is the same thing[2] as claviformin, originally described as a product of *Penicillium claviforme* by Chain, Florey, and Jennings[3] in 1942. None of these more recently discovered antibacterial substances offers greater promise as a therapeutic agent than penicillin; some, such as flavacidin,[4] seem more or less identical with it. Helvolic acid[5] somewhat resembles penicillin, differing from it in the highly desirable properties of longer persistence in the blood and of stability in the alimentary tract, whence it is absorbed, but suffering the grave drawback of toxicity to the liver, at least in mice. The supreme virtue of penicillin is its freedom from toxicity, and it is perhaps too much to expect that anything with this exceptional property should have a wider range of antibacterial activity. Nevertheless the possibility of such a substance remains. As Dubos[6] has lately pointed out in a general review of naturally occurring antiseptics, the methods employed in wide surveys are unfortunately not such as to detect the more valuable type of agent. If hundreds of materials have to be examined, only simple *in vitro* tests of bacteriostasis are usually employed, whereas the virtues of the true chemotherapeutic agent only emerge in the experimental animal.

These investigations are by no means confined to the products of bacteria and fungi. The higher ranges of the vegetable kingdom are being explored in a tentative way,

[1] *J. Bact.*, 1944, **47**, 391.
[2] E. Chain, H. W. Florey, and M. A. Jennings, *Lancet*, 1944, **1**, 112.
[3] *Brit. J. exp. Path.*, 1942, **23**, 202.
[4] Clara M. McKee, G. Rake, and C. H. Houck, *J. Bact.*, 1944, **47**, 187.
[5] E. Chain, H. W. Florey, M. A. Jennings, and T. I. Williams, *Brit. J. exp. Path.*, 1943, **24**, 108.
[6] *J. Amer. med. Ass.*, 1944, **124**, 633.

with the interesting possibility in view that the supposed medicinal virtues of herbs and roots may prove in some cases to be due to the existence in them of a substance with antimicrobic action. E. M. Osborn[7] has tested extracts of 2,300 species of flowering plants by the agar-cup method for substances capable of inhibiting the growth of *Staph. aureus* and *Bact. coli*. Positive results were obtained in 135 species, the most active being among the *Ranunculaceae*. It is of course known that both essential oils and alkaloids may have a bacteriostatic effect, and until it is clear whether the active substance in a green plant is of this or some other nature, its possible therapeutic usefulness cannot even be conjectured. Another new departure is briefly reported by a team of workers in the University of California,[8] the starting-point of which was the observation that certain algae make something which ultimately inhibits their own growth. From cultures of two species of *Chlorella* they have extracted in impure form a substances, which they name chlorellin, with considerable bactericidal as well as bacteriostatic properties exerted against a wide range of bacteria, including *Bact. coli* and *Ps. pyocyanea*. This investigation is at far too early a stage to predict its future, but it extends the field of these investigations to a new area. The phenomena of mutual antagonism in the plant kingdom may yet yield up secrets of value to man.

It is now customary, in the American literature at least, to refer to all such substances as "antibiotics." The term is perhaps already too firmly entrenched for any protest to be availing, but it may nevertheless be suggested that this word is singularly ill chosen. The broadness of its derivative significance implies a general protoplasmic poison, whereas the only such substances of any interest are those whose action is highly selective. To serve any useful purpose they must poison the microbic cell and leave the cells of mammalian tissues unaffected. A term with this more descriptive significance would be preferable, even if we had to coin a new word. Why not simply "antimicrobics"?

PENICILLIN IN THE MOUTH

Penicillin production in this country has hitherto amounted to only a small fraction of that in the U.S.A. Outside the Services, which have lately been generously supplied from American sources for the treatment of casualties, the scarcity of the home-grown product has been a handicap. Clinical research on the scale, for example, of studies in the treatment of syphilis recently reported from the U.S.A.[9] has been beyond our capacity. But this handicap has been turned to good account in at least one way: it has forced British investigators to devise economical methods of treatment. Economy in penicillin means local as distinct from systemic treatment, and when this is feasible it has two further advantages: it is far less tiresome to manage, and involves the patient in none of the discomfort associated with continuous infusion or frequent intramuscular injections. The success of local treatment depends largely on taking measures to secure continuous action; to this end surgical technique has been modified and new methods of application have been devised. A fresh advance in this direction is reported on page 686 by A. B. MacGregor and D. A. Long, who have devised a method for treating infections of the mouth and throat. The difficulty in this region is that the constant secretion and swallowing of saliva wash away anything intermittently applied. Penicillin was therefore incorporated in a slowly dissolving pastille, and the patient was instructed to insert another as soon as the previous one had disappeared. By this means the saliva could be kept fully bacteriostatic throughout the day, with a marked effect on its general flora as well as on that of the lesion under treatment. It has previously been noted by Garrod[10] that the great majority of the numerous bacterial species found in the mouth are penicillin-sensitive, with the result that mixed and often predominantly anaerobic infections due to bacteria derived from the mouth are amenable to penicillin treatment. Three examples of such infections are that commonly found in fractures of the jaw compound into the mouth, in tooth sockets after extraction, and in the tonsillar bed after tonsillectomy. Judging from the few cases treated, sepsis in these conditions seems to have been well controlled by the use of penicillin pastilles. Among specific infections Vincent's gingivitis shows the clearest response: symptomatic relief and the disappearance of the causative organisms were both rapid. This is a most troublesome and unresponsive infection to treat by other methods in current use, and if penicillin will indeed relieve and eradicate it so conveniently, this is a minor victory of far-reaching consequence. There appears also to be a distinct effect on acute haemolytic streptococcal infections of the throat, including scarlet fever. This even wider sphere of usefulness evidently calls for further study from the clinical standpoint. The fact of the rapid disappearance of the organism is encouraging, and may, as the authors point out, have a useful epidemiological bearing. It may be significant from the same point of view that the carrier state can be suppressed temporarily. The return observed to the *status quo ante* was only to be expected, since the depths of the tonsils in which the organism lurks must be quite inaccessible to a surface application. This is the simplest form of penicillin treatment yet devised, and embraces very common if not usually very dangerous conditions. If its predicted value should be confirmed the demand for penicillin for these purposes will be an additional embarrassment to those in charge of the present limited supplies.

TRAINING FOR THE D.P.M.

The second interim report of the Committee on Psychological Medicine of the Royal College of Physicians of London puts forward some fairly precise recommendations which will make the new diploma a much more rigorous and satisfactory achievement than the existing one. The course, it is recommended, should occupy five years instead of the present single year, and the subject-matter is to be comprehensive and thorough, including such ancillary medical and social sciences as are relevant to the proper understanding and treatment of psychiatric disorders. The first three years are to be spent in hospitals, clinics, and laboratories. A house-physicianship and also a post in a neurological department are considered essential. Child psychiatry, psychology, and industrial psychology are to be included. A notable arrangement proposed is that after the three years taken to pass the examination the diploma shall not be awarded until two further years of clinical experience have been spent in some special psychiatric field. The committee wishes to abolish the separation between the institutional psychiatrist and the psychiatrist engaged in private practice and also to limit the isolation

[7] *Brit. J. exp. Path.*, 1943, **24**, 227.
[8] *Science*, 1944, **99**, 351.
[9] *J. Amer. med. Ass.*, 1944, **126**, 63 67, 73.
[10] *British Medical Journal*, 1944, **1**, 528.

of "sub-specialists." A central board for examinations and for approving institutions for training purposes is contemplated; and the comprehensive and well-thought-out recommendations include some attention to the difficulty of candidates finding the means to take them through the various stages of the course. It is pointed out that American experience does not suggest that the greater severity of the regulations for the diploma will limit the number of candidates.

SCIENTIFIC WORK OF THE R.C.S.

A year ago the Scientific Report of the Royal College of Surgeons of England recorded the plans which had been made to obtain material out of which to rebuild the Museum Collections destroyed by enemy action. This year's report shows a generous response of Fellows, Members, and friends of the College to the appeal for specimens. The accession list, however, does not include material being held in store at various centres outside London and abroad ready for transfer to the College when the appropriate time arrives. It is only from a great mass of material that a proper choice of specimens can be made—a process which we hope will take into account the needs of both the expert and the student. The task of selection will be in the capable hands of Prof. R. A. Willis, the newly appointed Collins Professor of Pathology, who will have the good wishes of every friend of the old Museum in his work. Prof. A. J. E. Cave, in his position as Assistant Conservator of the Museum, has performed well the valuable and onerous duty of conserving the surviving specimens of the old Museum and of recording the difficulties under which his work has been carried out. His reports during the past four years have in turn contained the story of loss, salvage, preservation, and now reconstruction. The foundations of the future Museum are being laid with patience and understanding. In spite of shortage of staff the Museum has been able to perform useful service to research workers in many fields.

The Research Laboratories have pressed forward their work on hepatic dysfunction. The relation of diet and of specific dietary components to the rate of recovery from hepatitis is a most important finding which has immediate bearing on recent work on wound healing. It also has a bearing on the question of excessive nitrogen loss after trauma, including simple fractures. The extensive liver damage found in severe infections and after burns has not been given the attention it deserves. If this damage can be repaired or averted, as the report suggests it can, there is a new approach to the treatment of burns and infections. Of interest in the same connexion is the observation that patients with hepatic disease are unable to produce antibody in response to antigenic agents at the same rate as normal individuals. Now that many infections can be controlled by penicillin and the drugs of the sulphonamide group these metabolic problems assume greater significance. Their solution must influence considerably the after-care of surgical patients in the future. The present occupant of the chair of surgery at Johns Hopkins has well said that "the recent decreases in morbidity and mortality rates in surgical patients are due more to advances in pre-operative and post-operative treatment than to any other factor." Experience in this war has shown how important are such abnormalities as dehydration, acid–base balance, and hypoproteinaemia in influencing the recovery and as factors in the production of shock. Without a considerable increase in knowledge of hepatic function our treatment of such abnormalities must remain empirical. The work on carbon tetrachloride poisoning opens up a new approach to the problem of hepatic dysfunction following anaesthesia. Miller and Whipple[1] demonstrated that methionine could prevent fatal liver damage after chloroform anaesthesia in dogs depleted of protein. This report shows that methionine can exert a curative action after the damage has occurred. Of even greater theoretical and practical interest is the discovery that in renal failure associated with liver damage choline is an effective therapeutic agent. It is obvious that not all cases of renal failure can respond to choline, but the discovery that the type of renal failure described by Griffiths[2] occurs in man and can be treated by choline is of first-rate importance. Work on nerve injuries and regeneration of nerves after suture is being carried on by Dr. F. K. Sanders at Oxford. His recent publications have contained observations of great interest, and in association with Prof. H. J. Seddon and Dr. J. Z. Young he has thrown much light on the mechanism of nerve regeneration after injury and suture. We note with interest the way in which the laboratory staff have made use of clinical material for their study of the fundamental problems recorded above. This is the method used so successfully by what may justly be claimed is the English school of clinical science—the method of Ferrier, Head, and Lewis.

TUBERCULOSIS WORK IN WALES

We are fortunate in being able to gain through the thirty-second series of annual reports of the Welsh National Memorial Association a bird's-eye view of the tuberculosis work as it can be carried out in a considerable yet variegated population. As usual, the reports are lively and informative. Dr. Norman Tattersall (principal medical officer) has a good word to say for the new treatment allowances. The social work for patients is administered through the counties and county boroughs, unlike the dispensary and institutional work, which, in Wales, is directed by the Memorial Association and its branches. Dr. Tattersall thinks that this dual system leads to better understanding between the central organization and the counties. Mass radiography is going ahead, and Wales is the only part of Britain which has a truly mobile apparatus, accommodated in a motor van which is independent of main electrical supplies. Experience accumulated shows that about 5% of the subjects examined have to return for a large *x*-ray film, and 1% require observation for tuberculosis. Apparently Welshmen are becoming more "*x*-ray conscious"; there is a tendency for chest films to be demanded on unnecessary or trivial grounds; in Cardiff the welcome change is the patient's desire for more contact examinations. Problems, chiefly nursing and domestic, keep the waiting-lists for admission to sanatorium high, and nowadays the average length of treatment is one year—much longer than it used to be. The old "shyness of treatment" is disappearing, and with the combined influence of the Rushcliffe scales of salaries and help given by the Ministry of Labour, the staff shortages are being slowly overcome. Supported by a special gift from the Davies family, Prof. W. H. Tytler continues his research into the use of promin. The only sad and irrevocable note in these reports is the obituary of the late Lord Davies, the founder, creator, and inspirer of this patriotic Welsh movement since its inauguration 32 years ago.

We regret to announce the death of Sir Robert Kelly, consulting surgeon to the Liverpool Royal Infirmary and emeritus professor of surgery in Liverpool University. A memoir will appear next week.

[1] *J. exp. Med.*, 1942, **76**, 421.
[2] *Biological Symposia*, 1941, **5**, 193.

LOCAL AUTHORITIES: WHAT THEY ARE

The answer given in an Act of Parliament of 1916 is "any person or body of persons who receive or expend the proceeds of any rate and any other public body which the Ministry of Health may determine to be a local authority. . . ." In the Local Government Act of 1933 a local authority is defined as the Council of a County, County Borough or non-County Borough, Urban or Rural District, or Rural Parish.

The principal local authorities in England and Wales to-day are:

62 County Councils, with populations varying from 18,000 to 1,880,000;
83 County Boroughs, with populations varying from 26,000 to 1,000,000;
29 Metropolitan Borough Councils, with populations varying from 23,000 to 271,000;
309 non-County Boroughs, with populations varying from 900 to 200,000;
572 Urban Districts, with populations varying from 760 to 188,000;
475 Rural Districts, with populations varying from 1,400 to 135,000.

In addition there are 7,000 Parish Councils and 4,000 Parish Meetings (rural parishes not entitled to elect a Parish Council); there are some 600 miscellaneous authorities created for specific purposes ranging from local sea fisheries committees to Trustees of London Squares, and more than 1,100 joint boards or committees dealing with hospitals, water supplies, sewerage, burials, gas, town planning, etc.

This mass of governmental machinery is perplexing in structure, and there is perhaps no subject affecting so substantially his daily life in which the ordinary citizen displays less interest. The relation between the powers and functions, administrative areas, populations, and financial resources of this "loose hierarchy of elected councils" is illogical and inconsistent. Some authorities with small populations and limited revenues enjoy wider powers and higher status than others with large populations and abundant financial resources. Thus the County Borough of Canterbury, one of the smallest towns in Kent, with a population of 26,000 and a rateable value of £216,000, has comprehensive local government powers, while Harrow, one of the largest urban districts in the country, with a population of 188,000 and a rateable value of £2,110,000, exercises only the restricted powers of a district council. Nearly two-thirds of the 1,530 local authorities in the country serve populations of less than 20,000. In 8 non-county boroughs the rateable value exceeds £1,000,000, in 14 it is below £10,000. The product of a penny rate is £448 in one county and £84,000 in another. The rateable value of one town is £3,100 and of another £6,000,000.

Although the foundations of our system of local administration date back to the townships, hundreds, and shires of Saxon times, local authorities in their present form are the product of the last 100 years or so. Their status and constitution are at present governed by the Local Government Act, 1933. This Act provided that for local government purposes England and Wales (excluding London) should be divided into administrative counties and county boroughs, the administrative counties being divided into county districts—either non-county boroughs or urban districts or rural districts. What are the differences between these local authorities? Broadly, county boroughs are autonomous bodies responsible for all local government functions within their areas; the remaining authorities form component parts of the county. The county council, which administers certain services for the whole administrative county, is financed partly by rate precepts upon the borough, urban, and rural district councils, each of which performs local functions in its own area. The county council is charged with the duty of conducting a decennial review of the areas of these district authorities and has certain responsibilities for the organization of electoral areas in the county.

County Councils

County councils were established by the Local Government Act of 1888. They were elected bodies with mainly supervisory powers, although the Act transferred to them certain administrative business previously undertaken by Justices of the Peace in Quarter Sessions. The 62 county councils of to-day are those enumerated in the Local Government Act, 1933, and the London County Council. They consist of county councillors elected by the local government electors, and county aldermen elected by the county council from their own number or from persons qualified to be county councillors. The maximum number of aldermen is one-third of the county councillors. The aldermen hold office for 6 years, the senior half retiring triennially. The county councillors hold office for three years. A county council is statutorily required (*a*) to elect annually a chairman and vice-chairman, the former by virtue of his office becoming a Justice of the Peace for the county; (*b*) to appoint certain officers, including a Clerk, Medical Officer of Health, Treasurer, Surveyor, Analyst, Chief Constable, Clerk of the Peace, Registrars of Births, Deaths, and Marriages, Inspectors of Weights and Measures, and the necessary officers for the administration of public assistance and mental hospitals. The council is empowered to appoint such other officers as it thinks necessary for the efficient discharge of its functions. The meetings and proceedings of county councils are regulated by the Local Government Act, 1933, and by Standing Orders which that Act authorizes. At least four meetings a year must be held.

Municipal Corporations

Municipal corporations existed long before the Municipal Corporations Act of 1835. Many townships had obtained Charters of Incorporation from the Crown enabling them to be represented in Parliament, to control local trading, to appoint their own officers, and to collect their own taxes. Population or the size of a town was no criterion for the grant of a Charter—some villages had municipal corporations while important towns such as Manchester and Sheffield had no Charter before the 18th century. The Tudor monarchs exercised freely their power of creating boroughs by Charter. Many "rotten" or "pocket" boroughs were created during the reign of Queen Elizabeth to enable the Crown to obtain political representation in Parliament. In Yorkshire, Aldbrough and Boroughbridge were in the same parish and each returned two members at the time when Birmingham was not represented in Parliament. Until 1835 the boroughs were governed by various close corporations constituted on an oligarchical basis. The right to vote was restricted by Charter to members of the governing body of the borough—usually self-elected and not responsible to anyone for the management of municipal affairs. They existed, not primarily for the good administration of the borough, but as organizations for returning members to the House of Commons. The extent to which Charter Boroughs had grown is revealed in the Great Reform Act of 1832, by which 56 boroughs in England were disfranchised absolutely and 31 others each lost one member. In 1835 the principle of popularly elected municipal councils was established. This and subsequent measures to secure a uniform system of municipal government were consolidated in the Municipal Corporations Acts of 1882 and 1883. The municipal boroughs to-day are those named in the Local Government Act, 1933, with the addition of any new boroughs constituted since then.

County Borough Councils

County borough councils were established in 1888. The Local Government Act of that year constituted a separate administrative class of some 60 large boroughs which were either counties of themselves or had populations of 50,000 or more at the passing of the Act. The creation of a new county borough requires a local act, and a minimum population of 75,000 is now essential before a non-county borough can apply for the higher status. A municipal corporation is defined in the Municipal Corporations Act of 1882 and in the Local Government Act of 1933 as "the body corporate constituted by the incorporation of the inhabitants of a borough." In 1888 boroughs were divided into county boroughs and non-county boroughs, and by the Local Government Act, 1933, the corporation is given power to act through the borough council, consisting of a mayor (or Lord Mayor), aldermen, and councillors. The mayor is elected annually by the council from its own members or from persons qualified to be aldermen or councillors. During his term of office the mayor becomes a Justice of the Peace for the borough and a Justice of the Peace for the county in which the borough is situated. The mayor is empowered to appoint a deputy mayor. The

aldermen, one-third in number of the councillors, are elected by the latter from their own number or from persons qualified to be councillors. They hold office as aldermen for six years, but the senior half retires triennially. Councillors are elected by the local government electors for the borough and hold office for three years, the senior third of the members for each ward (or for the whole borough if it is not divided into wards) retiring annually on Nov. 1. The number of councillors is fixed by the Charter or other legal measure and distributed among the wards into which the borough is divided for electoral purposes in the proportion of three councillors, or some multiple of three, to each ward.

A borough council is statutorily required to appoint a Town Clerk, Treasurer, Medical Officer of Health, Surveyor, Sanitary Inspector, Auditor(s), Chief Constable (where the borough maintains its own police force), and other officers as set out under county councils, unless the borough is a non-county borough, in which case there is no power of appointment of Analysts, Registrars of Births, Deaths, and Marriages, Poor Law officers, and mental hospital officers.

Urban and Rural Districts

The "parish pump" so often criticized to-day has played a prominent part in local government. It was the parish which was taken as the local administrative unit when the first Poor Law was introduced in 1601. Over 230 years later parishes were combined into Poor Law Unions for the administration of poor relief by Boards of Guardians, though some "unions" remained single parishes. In 1848 a Central Board of Health was established, not responsible to Parliament, with power to create local boards of health in urban areas. Under the Public Health Act, 1872, the country was divided into urban and rural sanitary districts; the Poor Law Boards of Guardians were made the sanitary authority in rural areas and the borough councils and local boards of health in urban areas. The rural sanitary district was defined in the Act as "the Poor Law Union taken as an area for sanitary administration." The titles "urban district council" and "rural district council" were first used in the Local Government Act, 1894, under which urban district councils replaced the old local boards of health in urban areas and rural district councils took over the public health functions previously exercised by the boards of guardians in rural areas. The same Act established a parish meeting for every rural parish, and a parish council for every rural parish with a population of more than 300.

The urban and rural district councils of to-day consist of the councillors elected by the local government electors for these areas and a chairman, elected by the councillors, who by virtue of his office becomes a Justice of the Peace for the county. The district council may appoint a vice-chairman. The term of office of district councillors is three years, one-third of the council retiring annually on April 15 unless the county council, at the request of the district council, has directed that the members of the district council shall retire together in every third year on April 15. For electoral purposes an urban district may be divided into wards, and a rural district is divided into areas which are either parishes, or combinations of parishes, or wards of parishes. Urban and rural district councils are statutorily required to appoint a Clerk, Medical Officer of Health, Surveyor, Treasurer, and Sanitary Inspector.

The qualifications for registration as a local government elector are set out in the Representation of the People Act, 1928. The qualification is based primarily on the occupation of land or premises as owner or tenant. Among those disqualified are persons under 21 years of age and those subject to any legal incapacity, including aliens, persons of unsound mind, and those convicted of treason or felony.

The Medical Society of the London County Council has been formed with the aim of encouraging contact between the medical staffs of L.C.C. hospitals and of neighbouring municipal and voluntary hospitals and general practitioners; and to collaborate with the Clinical Research Committee of the L.C.C. Public Health Department. The inaugural general meeting is to be held in January, 1945. All whole-time medical officers of the medical service of the L.C.C. who have completed at least six months' continuous service are invited to apply for foundation membership to the secretary of the society (County Hall, S.E.1) by Dec. 1.

Reports of Societies

GASTRITIS

At a meeting of the Section of Medicine of the Royal Society of Medicine, with Dr. GEOFFREY EVANS in the chair, the subject of discussion was gastritis.

Introduction

Dr. T. IZOD BENNETT said that little was known of the aetiology of gastritis, its morbid anatomy was obscure, symptoms were often absent, and prognosis was doubtful. The one thing about which they could speak with certitude was the treatment: there was not any! During the present war articles had appeared on dyspepsia as a source of invalidity in the Services, in which it was shown that this was a common cause of disability; but in the course of a considerable experience he had not once succeeded in definitely establishing a diagnosis of gastritis in any member of the Services suffering from dyspepsia.

An entirely new light had been thrown on the condition by the introduction of a safe and reliable type of gastroscope, and on gastroscopy the diagnosis must principally rest, though even gastroscopic diagnosis must be accepted with reserve. Great care must be taken in drawing conclusions from the observations of the gastroscopists. He mentioned the remarkable studies, to which attention was recently called by the late Sir Arthur Hurst, in a book entitled *Human Gastric Function*, by Wolf and Wolff, which furnished a warning against the extreme danger of drawing conclusions from a single gastroscopic examination of any subject, and if gastroscopy was to be performed at least twice the difficulties of this method of examination were more than doubled.

The advent of fractional gastric analysis had led to the recognition of the relative commonness of the condition named "achylia gastrica." Work which he had done with Ryle on this subject on normal medical students suggested that complete achylia gastrica was present in 3 or 4% of normal healthy young adults. It was to be regretted that the gastroscopists had not yet investigated such cases, but it was certain that they occurred. Why, indeed, should a person with severe gastritis have any symptoms? A considerable proportion of patients after gastrectomy were symptomless, so that it was clear that obvious symptoms might not be produced by the mere destruction of the gastric mucosa.

Dr. Bennett concluded with the remark that an intelligent view of this subject could only be expected after reliable observations had accumulated enabling them to agree that certain data fully justified the diagnosis of a disease that at present was undoubtedly diagnosed with a frequency for which there was no justification whatever. Schindler and his collaborators wrote (*J. Amer. med. Ass.*, 1937, **108**, 465) that "chronic gastritis is a very frequent and often a very severe disease." This ridiculous assertion epitomized the literature which had so long misled them in their search for knowledge of this obscure subject.

Gastroscopic Pitfalls

Dr. F. AVERY JONES (Central Middlesex County Hospital) discussed gastroscopic pitfalls in the diagnosis of gastritis. The mucosa might be thicker than normal, more uneven, more rugose, giving a pebble-beach appearance. This was commonly called "hypertrophic gastritis," but Rogers and Magnus had failed to demonstrate any inflammatory changes, and Dr. Jones had confirmed this in a number of his own cases. This appearance was a constitutional change and probably within normal limits. A pebble-beach appearance could be produced by inflammatory reaction, but it was much more irregular and associated with patchy hyperaemia and an excess of mucus. Similarly atrophy of the stomach, non-inflammatory but endocrine or nutritional in origin, was liable to be called atrophic gastritis, and here again atrophy did follow inflammatory changes, but the appearance was much less uniform than with simple atrophy. A further pitfall was the change that might occur as an emotional reaction, which had been so well described by Wolf and Wolff.

Dr. Jones went on to criticize Schindler's classification of gastritis, first, because it was a mixture of cause and description, and, secondly, because it did not consider superficial, chronic atrophic, and chronic hypertrophic gastritis as separate entities, but merely as phases of one disease process. Dr. Jones preferred the following classification:

- Unknown cause—Non-specific gastritis:
  - Mechanical: Bad eating habits; Post-operative dyspepsia; Pyloric stenosis
- Known cause
  - Exogenous gastritis
    - Chemical: Alcohol; Aspirin; Corrosives
    - Infective: Salmonella; Diphtheria
  - Endogenous gastritis: Toxaemic — Uraemia

Naturally the full description should be given of the gastroscopic changes, but he did not advise subdivision on the descriptive basis. The points he looked for were degree, activity, position, thickness of mucosa, and associated mucosal changes. Of 335 cases of haematemesis and melaena, in which early gastroscopy had been frequently done, only 7 were diagnosed as active gastritis. He considered non-specific gastritis an important entity, but a comparatively uncommon disease. Pathologically there was an important discrepancy. Atrophic pyloric gastritis was commonly seen microscopically, but was very seldom diagnosed gastroscopically.

Radiological Diagnosis

Dr. MATHER CORDINER said that the radiographic changes which were to be seen in gastritis might be considered under four headings. (1) In gastritis there was an alteration in the slipperiness or stickiness of the mucosal surface. One got the impression from the *x*-ray picture that the surfaces were sticking together and that they were slowly separated from each other by the opaque medium as it flowed slowly over the mucous membrane. (2) A mild degree of gastritis stimulated the autonomic motility mechanism of the mucous membrane, so that an unstable and rapidly changing mucous membrane relief, especially noticeable in the pyloric region, was obtained. (3) The softness, mobility, flexibility, and deformation and obliteration of the normal mucosal folds were important characteristics. Pathologically altered folds showed a loss of flexibility, a decrease of movement on palpation, and were less easily deformed and smoothed out by pressure and by stretching. (4) In a large proportion of cases the basic pattern of the mucosal relief was not altered in gastritis. Large folds did not signify hypertrophy, a term which was only rarely justified radiologically in describing this condition. He summed up by saying that a radiological diagnosis of gastritis was possible when the mucosal relief was abnormal and was accompanied by rigidity of the folds. A diagnosis of hypertrophic gastritis was possible only in the presence of a polypoid hyperplasia of the mucosa. There were no characteristic findings which enabled the radiologist to diagnose atrophic gastritis.

A Condition rarely Diagnosable

Dr. P. E. THOMPSON HANCOCK said that of the various types of gastritis recognized clinically, histologically, and gastroscopically, only two, apart from the acute forms, had a recognizable syndrome—namely, alcoholic gastritis and chronic diffuse atrophic gastritis. The first of these could often be recognized, though it was now on the wane. In the second the patient complained of fatigue, anorexia, and loss of weight. Dull epigastric discomfort rather than abdominal pain was the usual complaint, and was not alleviated by alkalis. Nausea and vomiting were exceptional. On examination there might be some anaemia, but there was little or no epigastric tenderness. If with this clinical picture there was no radiological evidence of gastric abnormality and no free acid was found in a fractional test meal, a diagnosis of chronic atrophic gastritis was justifiable.

In his experience, radiology had not helped in the diagnosis of gastritis, and had often, in fact, been misleading. He had worked with several radiologists who had taken great interest in the correlation of the radiological and gastroscopic appearances, but he thought he could safely state that they now very rarely made any pronouncement about gastritis, confining their comments to the size of the gastric rugae. He was afraid also that the gastroscopic diagnosis of gastritis was not irrefutable. He had made just over 1,400 gastroscopic examinations, and had diagnosed gastritis in about 21%; but whereas in his first 300 cases he diagnosed hypertrophic gastritis 18 times, or in 6% of the cases, in his last 300 he had diagnosed it only twice, or in 0.66%. This was mainly due to the fact that the normal stomach had a far wider range of size and distribution of folds and degree of visibility of the area gastrica than was formerly recognized, and the criterion of the diagnosis of hypertrophic gastritis must be the presence of definite inflammation. In all other forms of gastritis he found that his percentage frequencies were fairly constant throughout the series.

In short, he believed that gastritis was rarely diagnosable as a clinical syndrome, and that gastroscopy was the only investigation which enabled the positive diagnosis to be made. But the gastroscopic diagnosis was not infallible, the tendency being to diagnose gastritis too frequently owing to insufficient allowance being made for the great variations normally occurring in the gastric mucosa.

Emotional Reactions

Dr. MORTON GILL described some of the outstanding observations concerning gastritis which had been made during the last century, down to the record series by Wolf and Wolff, who had shown that the gastric mucosa could reflect mental changes to an extraordinary degree. Thus with anxiety or resentment there were swelling and congestion, increased motility, and increased excretion of HCl. Fear produced pallor of the mucosa accompanied by a diminished excretion of acid. From this it followed that while gastritis might be the result of direct damage to the mucosa by a local irritant, equally, visible mucosal changes, initially vascular, in the nature of alterations in the blood flow, might be of central origin. Thus when it came to radiological or gastroscopic diagnosis of chronic gastritis it was at present difficult, if not impossible, to be certain whether some at least of the mucosal changes might not be an expression of anxiety on the part of the patient, concerning either the examination itself or its results. It seemed to him that understanding of gastritis would be advanced perceptibly when it became possible safely to perform biopsy upon the gastric mucosa, and to obtain a specimen of sufficient quality to allow histology of the living mucosa. He also suggested that the time had come to abandon the term "chronic gastritis" and to use instead purely descriptive terms —for example, "mucosal hypertrophy," "mucosal atrophy," "mucosal hyperaemia," etc.

Sir HENRY TIDY criticized the classification of Schindler, in particular his use of the term "hypertrophic gastritis." He agreed with what Dr. Hancock had said: that chronic catarrhal gastritis was the commonest form, but had no recognizable syndrome, and probably was often symptomless. He also referred to Army experience and handling of so-called gastritis cases, the loose use of the term "gastritis," and the advance towards precision, evidenced in the present discussion, as compared with what was held even as recently as four years ago.

Dr. J. JACQUES SPIRA submitted what he called a simple but comprehensive classification of chronic gastritis. Direct causes were inflammatory processes associated with increased acidity and chronic peptic ulcer, and accounted for chronic superficial or catarrhal gastritis produced by mild repeated irritation by mechanical, thermal, or chemical factors or the swallowing of purulent material, and chronic hypertrophic gastritis produced by severe repeated irritation, both being subject to immediate relief and cure by the removal of the offending agent. Indirect causes were degenerative processes associated with decreased acidity and gastric carcinoma, and gave rise to atrophic gastritis, with primary factors associated with deficiency diseases, and secondary factors associated with other pathological conditions, calling for appropriate substitution treatment.

Mr. JENNINGS MARSHALL, who was unable to be present, sent a contribution to the discussion in which he described primary and secondary gastritis, the latter arising as a generalized condition from any chronic obstruction. With regard to primary gastritis he made the interesting point that

all the appearances of secondary mucosal gastritis were to be seen also as primary forms, superficial and interstitial, the latter being sometimes hypertrophic and progressing to mammillary, polypoid, or cystic formations. He added that the use of the gastroscope had established the great frequency of mucosal gastritis, particularly after the age of 40, but the utmost care must be exercised in diagnosing a case as gastritis, above all in ascribing symptoms even to obvious disease appearances in the mucosa. In the course of some further discussion Mr. W. E. TANNER expressed his agreement with findings of Dr. Avery Jones and Dr. Hancock, and described the three types—thick, medium, and thin—into which, in his view, the gastric mucosa might be divided. Dr. FLETCHER commented on the fact that it was remarkable to hear a discussion without reference to the appearance in normal individuals. Further research on the normal was greatly wanted.

Dr. HANCOCK finally said a word in defence of Schindler, who had done valuable pioneer work in the early days of the gastroscope, though he had perhaps been carried away by enthusiasm in certain respects.

NUTRITION OF THE PREMATURE INFANT

At a meeting of the Section of Disease in Children of the Royal Society of Medicine on Oct. 27 the subject of discussion was the nutrition of the premature infant in the first year of life.

Dr. HELEN MACKAY, president of the Section, said that until recently the feeding and care of premature babies had been almost entirely in the hands of midwives, but there had been no systematic teaching, and each midwife and each paediatrician had to learn or fail to learn at the expense of the infants. Incidentally she stressed the importance of body temperature. A baby was much more likely to swallow or to suck if his temperature was between 98° and 100° than if it was between 96° and 98°; the cold baby would not take his food. She exhibited some tables indicating a scheme of feeding for premature babies in the first week of life, all the foods being constructed to provide 20 calories per fluid oz. In the case of the baby whose weight at birth was 3 lb., 30 calories were given on the first day, and this was increased until 150 were given on the seventh, a total for the 7 days of 610. In the case of the 5½-lb. baby, 40 calories were given on the first day, increasing to 270 on the seventh, and making a total for the week of 1,113. Her view was that the quantity of food given was much more important than the balance between protein, fat, and carbohydrates in different types of artificial feeds. The standardization of infant feeding in hospitals was of great value, as it enabled nurses and house officers to become thoroughly familiar with its details, and reduced to a minimum the likelihood of gross errors or sudden changes in food owing to changes in nursing or medical personnel.

Dr. MARY CROSSE (Birmingham) said that the feeding of the premature infant was not always easy. The infant had certain defects due to prematurity, such as feebleness, or sometimes absence, of the sucking and swallowing reflex, extreme liability to regurgitation, immaturity of the alimentary tract, and greater need for fluids. She put in a plea for catheter feeding through the mouth and not through the nose. In very small babies it was extremely easy to injure the nasal mucous membrane and render it infected. In her ward both oesophageal and stomach feeding had been tried out, and she much preferred the former because of less distension with air, and because the oesophageal feeding could be repeated without causing vomiting. In feeding the baby everything depended upon how quickly it tired. A beginning should be made with two-hourly feeds, going on to three-hourly. Nurses loved a spectacular gain in weight. In her hospital, however, it was survival that was stressed, not weight. The babies were weighed on the third, seventh, and tenth days. Little attention was paid if they had not gained on the third and seventh, but it was desired that they should gain by the tenth. It was not possible to get an infant of under 5 lb. to go regularly to the breast. It was always the practice in her ward to raise the head of the cot, and the baby was fed on the right side, thereby causing less cyanosis and distension, probably owing to the fact that the stomach emptied more quickly in that position. She found that a baby of 4½ lb. did not have a good appetite in a hot humid atmosphere. Accordingly when babies reached 4½ lb. they were taken into a cool room, and it was found that their appetites improved markedly. If a small baby had a body temperature of 96° she did not mind, but she did not like it to go below that point. The stabilization of temperature was more important than its elevation.

Dr. J. O'REILLY said that an analysis of feeding charts for a number of premature babies had shown that the feeds must be increased gradually to about 60 calories a day before the majority would show consistent gains in weight. An average gain of 1/2 oz. a day over a period was quite satisfactory. In general he found that when the babies were established on milk feeding no effect on the weight or on the condition of the child was produced by giving extra fluid. The fluid content of undiluted milk appeared to be sufficient. Small babies and babies born of toxic mothers were particularly liable to dehydration. Additional fluid in these cases caused an immediate gain in weight, but its continued administration had no effect after the dehydration had been overcome.

Major LAMB, U.S.A.M.S., believed the importance of humidity and the control of temperature had been underestimated. The amount of fluid that could be lost through the skin in a small baby could reach considerable proportions. It must be remembered that the smaller the baby the greater the skin area in proportion to the mass. He never allowed his babies to be weighed for at least a week after birth. The less the premature baby was handled the better. These were babies who still belonged to the uterus, and the more closely that environment could be approximated to the better. Dr. FRASER BROCKINGTON said that on analysing the cases of premature infants he had been astonished at the proportion who did not survive 24 hours, also that the proportion surviving were always very much the same in the same weight groups.

Dr. CROSSE, in reply to a question about the mortality of the premature infant, said that in her series babies weighing less than 2 lb. all died in the first 48 hours. In the case of those weighing between 2 and 3 lb., death might not take place until the next week. Babies of 3 to 5 lb. suffered most from intracranial haemorrhage, but this did not apply to those over 5 lb., from which point there were more deaths from sepsis and fewer from intracranial haemorrhage.

Two complementary papers on cinemicrography were given at the October meeting of the Association for Scientific Photography. Mr. H. Emmett first described the set-up used in one of the I.C.I. research laboratories. The second paper, by R. McV. Weston, entitled "Cinemicrography in Biological Research," dealt with many of the same problems, but described a more elaborate apparatus for higher-power micrography and using a 16-mm. Cine-Kodak special camera to record the images. Owing to the employment of living specimens, a rotating sector shutter was used to prevent overheating, and the whole of the microscope stage was enclosed in an incubator, the controls being outside. The heating elements were two 30-watt carbon-filament lamps shielded to prevent direct rays reaching the object and a chloroform-mercury thermostat next to it. As in the first apparatus the light was provided by a 100-c.p. pointolite lamp. After a full description of this apparatus and its mechanism for time-lapse cinemicrography, Mr. Weston projected a film showing the movement of leucocytes among the red corpuscles of the blood, and higher magnifications showed very clearly the triple nuclei and the movement of the grains within the white blood cell.

At a meeting of the Whipps Cross Hospital Medical Society on Nov. 3, the chairman, Dr. W. E. Joseph, presiding, the following cases were shown: (1) bilateral effusion into knee-joints; (2) cavernous sinus thrombosis; (3) polycystic kidneys; (4) secondary rash; (5) ulcerative colitis; (6) polycythaemia rubra vera; (7) spontaneous pneumothorax. The next meeting of the society will be held at 8.30 p.m. on Dec. 8, when Dr. Keith Simpson, Home Office pathologist, will lecture on "Common Sense in the Detection of Crime." This meeting will be open to non-members.

The following officers (1944–5) of the Association of Anaesthetists were elected at the annual general meeting on Oct. 25: President, Dr. A. D. Marston; vice-president, Dr. C. Langton Hewer; hon. treasurer, Dr. Z. Mennell; hon. secretary, Dr. W. A. Low.

Correspondence

Doctors for Germany

SIR,—In your issue of Sept. 30 you very kindly gave publicity to U.N.R.R.A.'s probable need for doctors to assist in the control of displaced persons in Germany. At that date it appeared probable that the military occupation of Germany might be imminent: unfortunately it now looks as if we must wait a little longer for the consummation.

By earlier direct application and through the good offices of the Central and Local Medical War Committees we have now the names and records of a considerable number of doctors available for service. Arrangements are being made to interview selected applicants in the near future, and those not selected will be informed that there is either no, or no immediate, likelihood that their help will be required.

I am extremely grateful to the large number of doctors who have expressed their desire to undertake what would be an arduous and possibly thankless task.—I am, etc.,

ANDREW TOPPING,
Director of Health, European Regional Office, United Nations Relief and Rehabilitation Administration

11, Portland Place, London, W.1.

Episiotomy

SIR,—May I be permitted to comment upon certain aspects of Dr. Gaskell's letter (Oct. 14, p. 511) replying to Dr. O'Meara's criticisms (Sept. 9, p. 353) of his procedure in episiotomy.

The wisdom of giving pituitary extract before the end of the third stage under any circumstances has, of course, been a cause for some difference of opinion for many a day. This Dr. Gaskell will doubtless concede, and in spite of his happy experience there are very many obstetricians who will continue not so to use it in the belief that as a general rule it is not sound practice. In this, as in many other instances, it is to some extent a question of deciding from general and personal experience that a particular belief is fundamentally sound and sticking to it. I think Dr. Gaskell has perhaps objected to the apparent petulance with which Dr. O'Meara says, "He doesn't like it, won't do it, and won't allow it to be done." The truth lies somewhere between, but I cannot help feeling that when Dr. Gaskell says he has frequently given pitocin when the head is well down and the os fully dilated, however foolhardy a given practice might be deemed, the conditions here are relatively so well-nigh foolproof that Nature would probably lend her aid to enable one to get away with it nine times out of ten. It has been stated: "It now seems that parturition begins as a result of the gradual accelerating convergence of a number of factors—structural, humoral, nervous, nutritional, and circulatory. The heightened contractile powers of the uterus under the influence of oestrin and distension require for true labour the intermediation of integrating factors, for if intense contractions of the myometrium alone were sufficient for parturition the administration of an oxytocic drug would hasten the process without real danger of rupturing the uterine wall. This, however, is not the case." I may be wrong, but it seems to me that Dr. Gaskell implies the not giving of pituitary extract before the end of the third stage is almost an old wives' tale.

I am equally out of agreement with him regarding some of his remarks on the use of ergometrine. I agree with Dr. O'Meara that the giving of it as a practice before the placenta is expelled is not a good thing; so, apparently, does Dr. Gaskell, based for the most part on the isolated experience of one occasion when a drastic result followed. Years ago I did some unpublished work on the use of ergometrine before the expulsion of the placenta in a large series of quite unselected cases. I gave it intravenously not once but literally hundreds of times, not wholly in ignorance, nor without thought, and I never had any untoward results, nor did I have to risk my popularity by calling on a large part of the honorary staff to deliver me out of my predicament. I found that the duration of the third stage was on the average definitely shortened, and the amount of blood lost quite appreciably diminished. Present circumstances make it very difficult for me to have access to my figures. My impression was that ergometrine gave more even, less erratic contractions than pituitary extract, though I had no positive proof such as kymographic tracings. In cases of p.p.h. I also felt that while I had locked the door with ergometrine I liked to bolt it with an injection of pituitary extract. This may have been overcaution, but I think even nowadays most obstetricians will forgive me a little of it in dealing with p.p.h. I suppose I used the same kinds of preparation as Dr. Gaskell, but, even with my happy experience of the drug, I still don't suggest that it should be used before the placenta is out *as a practice*, and, also, that if one had gone on using it long enough I feel sure one may well have met the disaster Dr. Gaskell relates. Lastly, although I am not in full possession of the facts, I cannot help wondering why Dr. Gaskell was using chloroform for a delivery. There are quite a number of very eminent obstetricians who banished chloroform from the delivery-room many years ago. Here, again, the truth, I admit, lies not wholly in the extreme, but why not use an anaesthetic less notorious for its relaxing effects upon the uterine musculature? I have always felt that the secret of good obstetrics lies no less in the intelligent anticipation of likely disaster and its judicious avoidance than in skilled manœuvre if it does occur. It saves me trouble, and almost invariably saves the patient trouble too. I agree with what the nurse said, but I wonder if I would agree with the reasons for having to say it.—I am, etc.,

H. VINCENT CORBETT,
Major, R.A.M.C.

REFERENCE

Reynolds, S. R. M. *Physiology of the Uterus.*

SIR,—The article by Dr. J. D. S. Flew (*Journal*, Nov. 11) gives an excellent account of the technique, reasons for, and risks of this simple operation. I agree with him that the central "J"-shaped episiotomy is the best one to perform, because not only does it avoid the risks of (*a*) haemorrhage and (*b*) trauma to Bartholin's duct, but it also prevents severing muscle fibres in the perineal floor. Division of the central tendon is the soundest anatomical and surgical procedure.

One has seen many cases of lateral episiotomies in post-natal clinics, and in quite a fair percentage of these the vaginal outlet is gaping owing to retraction of the cut muscle fibres which have not been approximated by the repair of their fascial sheath. In a central episiotomy, repair of the central tendon is easy and the result entirely satisfactory. The risk of extension of the central episiotomy into the rectum is avoided by the use of the curved incision, but writers such as Pratt, Hodgkinson, and Kennedy (*Amer. J. Obstet. Gynec.*, Feb., 1942), who quote a series of 300 cases of straight central episiotomy, state that the risk of a third-degree extension is greatly exaggerated, and, secondly, that in the 10 cases of their series in which it occurred repair of the wound in layers, after the third stage of labour, resulted in complete healing by first intention.

The actual time at which the episiotomy should be performed is, as the writer states, when marked perineal bulging has occurred. Why is this the moment of choice? Because it is only then that one can decide whether or not an incision is necessary, and stretching of the perineum by demarcating the structures in it allows the operator to make the incision in the correct position. It should be stressed when teaching the technique of episiotomy that the actual incision is made during uterine relaxation, fundal pressure on the foetus being the only factor concerned in stretching the perineum.

I do not agree with the author's suggestion that midwives should be taught to perform an episiotomy; in his list of indications for its use a medical officer should be in attendance to deal with the complications mentioned, and it is the duty of the midwife to send for medical aid immediately she thinks any abnormality has arisen.

Lastly, no reference was made in the article to the method of repair or the material used for the repair, although Dr. Flew stated that the sutures of a perineal tear are uncomfortable during the 7 to 10 days they are *in situ*. The repair must be done in correct anatomical layers; mass ligation by through-and-through sutures leads to pocketing of blood clot, which readily becomes infected in the perineum. The material used throughout should be No. 0 20-day (chromicized) surgical gut,

the skin layer being approximated by a subcuticular suture. I have repaired many in this way and have found that the results are excellent and the discomfort to the patient negligible. —I am, etc.,

London, W.1. IVOR HUGHES.

Aluminium Dust for Silicosis

SIR,—With reference to your leader on this subject (Nov. 4, p. 601) may I point out that the experimental results obtained by Denny, Robson, and Irwin are in no way dependent upon the obsolete theory that "silica exerts its injurious effects upon animal tissues through a slow transformation into silicic acid." Their results are in entire conformity with the modern belief founded upon the work of Sir Lawrence Bragg (and of Leroy Gardner on the experimental side) that silica is at its maximum chemical activity in the aerosol state, provided the particles are small enough. Indeed one of the methods—though by no means the best method—of satisfying the active silica surfaces and rendering them chemically inert is by converting the aerosol into a hydrosol. A better method is to satisfy the active surfaces of the dust particles by coating them with aluminium. This is what Denny, Robson, and Irwin have done. The unsatisfied oxygen atoms of the silicon–oxygen tetrahedra at the surfaces of the particles combine with the aluminium to form a surface layer of alumina. If we are to continue to describe such chemical reactions as "adsorption," then all silicates become "adsorption compounds."

The Americans are very careful, when writing of "solutions" of silica and of "silicic acid," to put these terms between quotation marks. For they know that there are no true "solutions" of silica and that "silicic acid" is a hypothetical or inferential "acid" which is not found in Nature, cannot be demonstrated by any indicator, and cannot be manufactured. What are found are varying suspensions of clumped silicon–oxygen tetrahedra—all characteristically colloidal. True "silicic acid" remains an unrealizable ideal, a ghost that has never materialized.

Pure or "classical" silicosis is a rare condition of the lungs, and is in all probability produced by the direct chemical action of active silica dust particles on the cells which take them up. Such active dust is typically produced by shot-firing or dry compressed-air drilling in quartz, quartzite, or quartzore rock, or by stonemasons dressing such rock with the chisel. The average pneumonokoniosis met with in this country is a mixed condition in which silica dust may play a part, but which may be caused by the inhalation of almost any mineral dust, provided that it is in sufficient concentration and the exposure is long enough. Its development is greatly aided by any disease or condition which interferes with the mechanism of dust elimination from the lungs. In these cases the action of the dust is mainly mechanical by lymphatic blockage, and they may be described as "dust retention fibroses." There is little reason to doubt that even aluminium dust in dense concentration might in time, with prolonged exposure, lead to such blockage, and the German findings may not be so mysterious after all.

One other point: it is frequently assumed that if a large amount of silica is recoverable from lungs on incineration, the victim must have suffered from silicosis. The fallacy of this reasoning has been demonstrated over and over again, notably by Prof. Matthew Stewart of Leeds and his assistants. In classical silicosis of the South African type the amount of silica so recovered may be surprisingly small; but in a retention fibrosis the silica content of the ash may be enormous, with many large particles, although any action it exerted may have been merely the mechanical one of blocking up the lymphatic channels.—I am, etc.,

Chichester. PATRICK HEFFERNAN.

Mass Radiography

SIR,—Dr. Norman Henderson in his letter of Oct. 28 (p. 574) criticizing the present national scheme of mass radiography, makes a number of statements not based on fact. In his first paragraph he writes: "Difficulties of equipment manufacture could be overcome if all *x*-ray manufacturers were invited to co-operate instead of confining the production mainly to one firm." Several manufacturers were in fact invited to submit designs to a committee of experts nominated by the Medical Research Council's Committee on Tuberculosis in Wartime. The most suitable design was selected, and if other apparatus eventually comes to be designed and produced which is of equal or better standard there is no reason to assume that consideration would not be given to its approval by the Ministry. The Ministry of course does not "retain mass radiography in their own hands," but has allocated the units to local authorities so that the work can be conveniently linked up with the existing tuberculosis services.

The success of mass radiography depends largely on the discovery of early as well as chronic tuberculosis. Failure to find early cases will cause the public to lose confidence and the number of volunteers to diminish. The detection of early cases is only possible with the most meticulous technique, and the suggestions that girls who cannot get into radiography schools can be trained very quickly for this type of work shows astonishing ignorance of the technical advances made during the past few years. It is possible with one unit, with relays of technicians and a large clerical staff, to examine 3,000 individuals a day if the method were compulsory and the individuals rounded up by a special force. The anonymous manufacturer quoted by Dr. Henderson presumably has this idea in mind when he suggests that the unit, instead of working in factories, should examine all individuals "in an area of two or three square miles."

Dr. Henderson's advocacy of great speed shows no appreciation of the difficulties of diagnosis of pulmonary tuberculosis. Mass radiography has not made the diagnosis of pulmonary tuberculosis easier—it has, in fact, made it much more difficult by bringing to light latent or subclinical early cases. These cases require great tact and experience and often prolonged observation; many, we know, recover spontaneously. It is not the Ministry's policy to encourage slapdash "Continental" methods without regard for the subsequent care of the individuals found to show deviations from the normal.

Despite the introduction of mass methods into medicine the Ministry is still of the view that medicine is a profession and not a business.—I am, etc.,

London, S.W.1. PETER KERLEY.

Ministry of Health and Radiography

SIR,—We cannot congratulate the Ministry of Health on its handling of *x*-ray diagnosis and early treatment. The official procedure has been: (1) in 1912 to transfer the Bismarck insurance system to Britain, and force it on the people and the doctors; (2) to omit the *x* rays from the list of benefits, depriving the whole nation for 30 years; (3) to reject (Mr. Neville Chamberlain) the findings of the Royal Commission recommending the *x* rays for insured persons; (4) to set up mass radiography without accompanying arrangements to provide beds for the cases selectively diagnosed; (5) to monopolize production of mass-radiography machines mainly to one firm (see *Journal*, Oct. 28, p. 574). The Australian Government has trusted the doctors to select the tuberculous soldiers from the majority, and to apply special radiography only to these. By so doing it has saved Australia much expense to the taxpayers, as well as eliminating the unfit.

The House of Commons may vote for social insurance and health regulation; who is to carry these out? Obviously not the present departmental personnel. Federalization of administration to London, Edinburgh, Cardiff, and Belfast is the first step to individual and national reconstruction.—I am, etc.,

Glasgow. ARTHUR TURNBULL.

Artificial Insemination

SIR,—While having no practical experience in artificial insemination, I have been asked about it often by sterile couples, and hence have some knowledge of the different feelings which the matter arouses. The subject has been repeatedly referred to in these columns and has been singular, perhaps, for the lack of objectivity of your correspondents. The emotion of some of these writers suggests mainly that they are feeling about the matter as if it were their own problem, or their dogmatism suggests an experience too limited to appreciate how great may be the variation of other people's feeling on the matter.

Your most recent correspondents (Oct. 28 and Nov. 11) find fault with the procedure from the point of view of the Catholic Church (whose dictates on other obstetric matters are not accepted by the profession at large) or on grounds that it "offends" the marriage bond, and, apparently, on grounds of some vague ethical horror of semen being emitted anywhere other than in the vaginal canal. Other correspondents throughout the year have asserted that any woman who is artificially inseminated will later "draw away" from her husband; that the child "will come between" them; or that the husband will become jealous of the child. Indeed so many possible emotional disasters are portrayed that one wonders if they exist more in the fears of the critics than in their actual experience. There must be many patients who would share the feelings of such critics, but they would not, naturally, be found among those who seek advice upon the matter.

Practitioners experienced in dealing with sterility know how very deeply some women feel the deprivation of child-bearing. Their barrenness may be a source of such humiliation and depression as to be hardly credible to an outside observer. When such a woman is married to a sterile husband, in these days it is almost inevitable that the husband raises the question of artificial insemination; nor is it at all uncommon for a sterile man to wish that his wife should not, through his misfortune, be denied the fulfilment of her deepest desire. Out of respect for some of these husbands with whom I have spoken, I think it only fair to say that many of them express feelings totally dissimilar from those of your anxious correspondents. It has been often a privilege to see the tenderness and generosity with which such men may approach the subject. "I would give anything on earth for my wife to have a child of her own making" has been said to me; and, again, "How could I possibly love an adopted child as much as one born of the woman I most love?" How could such an attitude do anything but arouse gratitude and appreciation in the wife, and thus enrich their marriage in the deepest way? If "organized religion" has no use for marital bonds of this sort, it may well be religion itself which will be found wanting.

Other objections raised against artificial insemination may apply to some cases, but not necessarily to others. Not every patient feels the procedure to be offensive or humiliating; as with most gynaecological work, this depends as much on the attitude of the practitioner as of the patient; nor do they fail to appreciate the good will which the donorship (gratuitous, at any rate, among clinic patients) has implied. Nor, indeed, need the husband be necessarily the "loser." I know of one husband, impotent as well as sterile, who has had his self-esteem most wonderfully enhanced since his wife has (unknown to other people)) given birth to such a child.

No practitioner would ever claim that the procedure of artificial insemination can be lightly undertaken or have any wide application in this country. But surely it is time that the medical profession adopted a more realistic attitude towards it. Furthermore, since no two people feel alike in matters such as sexual intimacy or child-bearing, it surely behoves more fortunate people not to deny a barren woman the achievement of her greatest desire or to criticize her husband's generosity in helping her to reach it. Although such ways of feeling may be personally unacceptable to a practitioner, he could refrain from condemning aspirations admittedly outside his own philosophy.—I am, etc.,

London, N.W.1. JOAN MALLESON.

SIR,—While agreeing with Dr. Newsholme that the medical profession needs to keep a careful eye on the ethics of insemination, I am frankly appalled by the attitude to masturbation which his letter reveals. Apparently he believes that a married couple should deny themselves the fulfilment of parenthood unless ejaculation takes place through stimulation produced by friction of the penis with the vagina. If this is not possible and the semen is produced by friction with the fingers, he asserts the act to be "so besmirching as to make it wrong." Wrong in the eyes of what sort of deity, I wonder!

One does not expect a man of Dr. Newsholme's eminence to perpetuate the unbalanced emotional attitude to masturbation which is the basis of so many neuroses. One should properly distinguish between masturbation as a habitual expression of sex life and masturbation as an occasional resource when there is prolonged deprivation of normal or accustomed sex life. In the one case it is an immature self-centred act, betraying an infantile personality. The addict needs to be freed from the fixations which are keeping him at that level. In the other case it is the deliberate choice of a free adult personality, and no stigma of any kind need attach to it. In the case of the married couple aforesaid the desire to produce a child at the cost of a mechanical intrusion on their emotional life is a proof of their mutual love, which nothing can "besmirch."—I am, etc.,

Birmingham. R. MACDONALD LADELL.

Physiology of the Vagina

SIR,—I have read your annotation on the physiology of the vagina (Nov. 11, p. 635) with much interest. Will you, however, forgive me for a criticism? You say: "The Fallopian tubes, uterus, and vagina are all developed from the Müllerian ducts. It is therefore not surprising that the tubes and vagina resemble the uterus in that they react to ovarian hormones." Even if the first of these sentences be entirely correct, which I doubt, why should we *therefore* expect that the organs concerned would react to ovarian hormones? Such reactions are not confined to structures of Müllerian origin, nor within the Müllerian system are the reactions alike in nature or equal in degree. Apart from the supposition (which I do not accept) that the vagina is wholly derived from the Müllerian ducts, it may be borne in mind that the response to oestrogen does not cease abruptly at the introitus.

I would not wish to trouble you with a letter on the subject if it were not that the biological actions of sex hormones comprise a new branch of knowledge of which we are only now working out the principles; at this stage expectations and assumptions may be unreliable guides.—I am, etc.,

The Chester Beatty Research Institute, Royal Cancer Hospital. HAROLD BURROWS.

Supplement to Breast-feed

SIR,—Dr. Lydia Fehily's interesting article on human-milk intoxication (Nov. 4, p. 590) prompts me to call attention to a fairly prevalent human-milk deficiency condition, increasingly common nowadays, which, while not so directly lethal to the baby, is serious enough to merit early diagnosis and treatment. I am referring to protein deficiency in breast milk. It is my impression that about every one in six "new" babies suffers from it in the welfare centres I attend. The clinical picture is as follows. A worried mother explains that the baby appears always to be hungry. It is restless, sometimes even during sleep, of which there is relatively little because it cries so much and appears generally irritable. The baby feeds voraciously but does not appear satisfied. The general wretchedness of both is usually apparent. Test-feed results sound reassuring, the milk being adequate or even abundant. The pathognomonic answer usually requires to be elicited carefully; sometimes visual evidence is necessary. It is that the stools are dark green and contain curds, sometimes slime, and, if the condition has been present long enough, sore buttocks in addition. The baby has gained very little if at all.

If food fads are persisted in under present-day rationing conditions, and these are very common, such as refusal of cheese and fish and sharing the pint of milk, it is not surprising that the breast milk should contain insufficient protein. Further, in infant welfare centres most of these cases are seen in very young babies, so that the mothers are still not recovered from the effects of childbirth, or, as I recently found, the condition was present in an exceptionally well-fed woman of frail type who was still having uterine haemorrhage after six weeks.

Treatment consists of giving minimal amounts of supplementary cow's milk, which fortunately is rich in protein. For instance, a baby of a month or so usually has all its protein requirements restored by one tablespoon of cow's milk three times a day. Maximum requirements at any suckling age are no more than four tablespoons four times a day, after the breast, assuming there is adequate secretion. Apart from larger amounts being unnecessary, it is often strategically inadvisable to give encouragement to the idea that the bottle feeds are superior to the breast, the magical effects in such cases being so striking that preparatory explanation is very necessary. Too often such babies are soon weaned, with the explanation that the mother's milk "can't be any good," and

which the results appear wrongly to justify. These cases, correctly handled, are the most quickly rewarding to all concerned. The following week a smiling mother brings a sleeping baby which has made a gain of anything between 8 and 12 oz. The stools are normal. Not only is the baby completely changed in manner and appearance from a sickly, irritable creature, the potential victim of intercurrent disease, but the mother almost equally so, partly due to relief from worry and restless crying, and partly due to an increased sense of well-being following an ingestion of proteins "for the baby's sake."—I am, etc.,

London, N.W.8. AUGUSTA BONNARD.

Infantile Diarrhoea and Vomiting

SIR,—It is possible that this condition varies in different parts of the country: it is certain that the features claimed by Dr. Leathart (Nov. 11, p. 637) as common in Birkenhead are uncommon in Sheffield. In the last fifteen necropsies I have performed on infants dying of D. and V. a pathological condition of the middle ears was found only twice, although looked for in all cases. This proportion is not significantly different from that found in infants of the same age group dying from other diseases. I do not quote the very much larger total numbers of necropsies performed on infants dying of D. and V., since the middle ears were occasionally not examined; the proportion showing any inflammatory lesion in this region was similar in those examined to that in the smaller series. Anatomically it seems unlikely that the mastoid could be infected by material travelling up the Eustachian tube without some signs of inflammation being visible in the middle ears.

Twelve of the fifteen infants had notable fatty changes in their livers. I have yet to perform a necropsy on a breast-fed infant who has died of D. and V.—I am, etc.,

Sheffield. H. E. HARDING.

Sulphapyridine by Ryle's Tube

SIR,—The article by Lieut.-Col. Ransome and his colleagues (Nov. 4, p. 594) interested me greatly. I was in India in 1940 and 1941 and was faced with the treatment of two patients who were extremely ill with lobar pneumonia. Both were vomiting profusely and the only drug available at that time was sulphapyridine. The intravenous form was not then available in our hospital. Sulphapyridine was tried, but this only made the vomiting worse, and both patients seemed to be going rapidly downhill. I had the idea of passing a Ryle's tube as far down as possible and introducing the drug in this way. I first aspirated the gastric contents and washed the stomach out with a weak solution of sodium bicarbonate. I then passed the tube further on, as I piously hoped into the duodenum, and introduced the crushed suspension of sulphapyridine in water. This was repeated at four-hourly intervals, leaving the tube *in situ*. The result in each case was exceedingly gratifying. The temperature came down, vomiting ceased, and the patient started to pick up within twenty-four hours.

That the alimentary canal of dehydrated patients is capable of absorbing large quantities of fluid appears to have been amply demonstrated by your contributors, and if their results are borne out by others then this method should commend itself to us for two reasons in particular: first, that fluid is being introduced into the body in the way that Nature intended it to be, and, secondly, that it has the great merit of simplicity.—I am, etc.,

F. L. DYSON,
Capt., R.A.M.C.

Tuberculosis in Kent

SIR,—In a recent issue you published a summarized report of a debate in the House of Commons on a motion by Sir Waldron Smithers concerning the treatment of tuberculosis in Kent, and the circumstances regarding the admission of a certain patient to hospital when, in addition, strong criticism of myself as administrator of the tuberculosis work in Kent is implied. In order that this matter may be properly understood, I would be extremely grateful if you would allow me to comment briefly on this report, because, while criticism of my behaviour is of no interest to your readers, important principles, which concern all whose duty it is to carry out public health administration, are involved. The facts which I shall give are not in dispute.

A patient was sent by his doctor to hospital for an *x*-ray of his chest. The doctor was told that the appearances were suspicious and consequently referred him to a tuberculosis officer on my staff. Pulmonary tuberculosis was diagnosed and the patient was placed on domiciliary treatment and his name put on the usual waiting-list for admission to sanatorium. Unfortunately, at the present time, owing to the length of the waiting-list, a long delay is unavoidable. During this period neither the patient's wife nor the doctor had asked the tuberculosis officer to call upon the patient. After about six weeks Sir Waldron Smithers, M.P., in whose constituency the patient resides, asked me for information as to the position, since the patient's wife had complained to him. I gave Sir Waldron Smithers a very full report, but it transpired that after having visited the patient he himself had succeeded by direct telephone contact in getting the patient forthwith into a London voluntary hospital.

Here is should be noted that the same hospital on three separate occasions previously had refused formal application from me for reception of tuberculous patients but had placed the patients on the waiting-list.

In addition to this interference with normal procedure, Sir Waldron Smithers took the unusual and, in my opinion, regrettable course of entering into correspondence with me, and also, unknown to me, with one of my tuberculosis officers at the same time in regard to the same patient. In the House of Commons Sir Waldron Smithers quoted from my letters one or two sentences apart from their contexts, suggesting that I had little sympathy with the sufferings of the tuberculous and allowed officialdom to interfere with the prompt treatment of patients because I had referred to the fact that a tuberculosis officer dealing with one particular area would not be in a position to speak on the council's policy regarding tuberculosis in the county as a whole. In general, a more accurate and fairer statement of the facts of the case was given by Miss Horsbrugh in her reply to Sir Waldron Smithers.

The facts as regards tuberculosis in this county have been frequently and fully reported to the Public Health Committee. The Ministry of Health is aware of the position, and, to the best of my belief, everyone concerned has done everything possible to alleviate a situation which is everywhere recognized as deplorable. It is, however, a national problem, not in any way confined to this county, and until young women can be persuaded to come forward to be trained as tuberculosis nurses long waiting-lists will continue, and, owing to delay in isolating the infectious, the circumstances will be likely to deteriorate.—I am, etc.;

Maidstone, Kent. CONSTANT PONDER,
County Medical Officer.

Spontaneous Rupture of the Spleen

SIR,—I read with great interest Mr. Lionel Jones's paper on spontaneous rupture of an apparently normal spleen (Oct. 28, p. 561), and I would like to record a case in which much local discussion failed to elucidate the cause of the splenic rupture.

A married woman aged 33 was admitted to hospital on June 12, 1942. She gave this history: For two years she had had occasional attacks of fever and upper abdominal pain similar to the present attack. Between attacks she did not suffer from indigestion. The present attack began one week previously with pain in the hypochondrium on the right side, stabbing in character, passing through to the back and towards the right groin. Some nausea but no vomiting; normal bowel action and no micturition symptoms. Menses normal and no chest symptoms. Appendicectomy 1929.

On examination: T. 100.2°, P. 120, R. 26. General condition good but rather obese. Tongue moist and clean. In the abdomen there was tenderness all over the epigastric region but maximal in the right hypochondrium. Murphy's sign positive. A diagnosis of acute cholecystitis was made and the patient watched. Her symptoms became worse, and seven hours later following a sudden collapse a laparotomy was performed; the tentative diagnosis was a ruptured empyema of the gall-bladder. At operation the peritoneal cavity was full of blood due to a ruptured spleen. Splenectomy was begun, but after ligature of the pedicle the patient's condition was so poor that the peritoneum was closed with drainage. The spleen was not abnormally mobile. The patient died one hour later.

At post-mortem the gall-bladder and other organs were normal except for a small subpleural haemorrhage at the base of the left lung, and the spleen which measured 8 by 5 in. The enlargement was due to a large subperitoneal haemorrhage which had burst into the peritoneal cavity. Histologically it was reported as a subacute septic spleen with a rupture and a suggestion of a myeloid reaction, which was not supported by the findings in the other organs. Leukaemia was therefore not considered as the diagnosis. The liver

showed subacute inflammatory infiltration of the sinusoids, and the kidney post-mortem degeneration. The lungs showed congestion and patchy collapse.

The one obvious comment on this case is that laparotomy was delayed too long, but the history and the physical signs on the right side led to a misdiagnosis. Why this spleen ruptured is difficult to determine and lends itself only to speculation. Though trauma is impossible to exclude, the husband was closely questioned and no history of trauma was forthcoming. From the pathological report this was not a strictly normal spleen, but no primary focus of infection was found.—I am, etc.,

Lambeth Hospital, S.E.11. R. F. HENDTLASS.

Service Medicine

SIR,—Capt. Piper's letter (Sept. 2) paints a very inaccurate picture of the life and work of a regimental medical officer. I was in general practice for some three years before becoming an R.M.O. of a gunner unit in 1940. I have remained with the unit in that capacity ever since. During two and a half years in the U.K. I was able to get "to know" the officers and men, their strong points and weaknesses, without any difficulty whatsoever. The suggestion that mistrust is engendered by an R.M.O.'s "friendliness" with his C.O. is an extraordinary one. It presupposes that the men have no trust in or respect for the average C.O., that he is in effect an ogre and completely inhuman. Nothing could be further from the truth.

I found the job of weeding out those men whom I considered to be unfit mentally or physically for active service over-seas, and helping to promote and maintain the health of the remainder, both novel and stimulating. For the first time in my life I was able to appreciate the importance of preventive medicine, and had time to think over the elemental reasons for sickness and to realize the major part played by environment, living conditions, nutrition, etc.

The statement that "any sick must immediately be sent to hospital as the equipment provided lacks the essential for diagnosis" is grossly exaggerated. Every R.M.O. has an auriscope, and I have never been handicapped by the lack of a sphygmomanometer, having for the most part to deal with constitutionally fit men between the ages of 20 and 40. Admittedly I have no microscope, but here I should like to digress a moment. In the alternatives that Capt. Piper offers for a G.P. in the Army he makes no mention of field ambulances or dressing stations. It is possible that he includes these in the term "collecting units," but if so he is doing them an injustice. When not functioning on an active front these units hold and treat a large number of sick. These are cared for by M.O.s without clinical interference from their C.O. They have access to a microscope which they can and do use.

Diagnosis remains the crux of medicine, and cases have to be sent to hospital for investigation even in civilian practice. My only regret is that I have not had the opportunity to practise obstetrics or administer anaesthetics.—I am, etc.,

J. A. J. HAMMOND,
Capt., R.A.M.C.

SIR,—"Under Thirty" is clearly but recently commissioned. If he had had more experience of medical practice before joining whatever Service he now belongs to he would have understood better what is required of a doctor, either in a Service or out of it, for the good of his patients.

In many branches of the fighting Services, and particularly in the medical branch, the number of forms to be completed is certainly large and the work involved is considerable and tedious. But, although many attempts have been made to effect a reduction, it has proved impossible to do so without impairing efficient administration or the clinical records which are so essential to the ultimate welfare of the individual patient and his comrades still actively engaged in war. Let "Under Thirty" try to understand the purpose of each of the returns which he has to render, and then decide if any one of them can be eliminated. And when he has had longer service he will probably better understand the responsibilities which make it necessary that every officer should inspect and be answerable for the equipment of troops in his charge.

Having myself just completed a long period of active service in the Army, there is one remark in his letter which I consider should not be passed without comment, for it is a gross misrepresentation of the spirit both of the troops and of the doctors who look after them, and I do not doubt that it has no fairer application to either the Navy or the R.A.F. He says, speaking of sick parades: "One thinks not of a patient to be healed but of a man who may be trying to get away with something (not a malingerer, for they are rare, but an exaggerator), and he has to prove he is ill before you start to think of him." It is most sincerely to be hoped that "Under Thirty" is serving in some large medical unit and is therefore under the immediate command of a senior officer. For if he were on his own—for example, M.O. to a battalion—his attitude at sick parade might well prove disastrous until the C.O. quite realized what was going wrong.

But "Under Thirty" need not despair. When he returns to civil life he will learn, in whatever form of practice he may follow, that the great proportion of his patients who exaggerate are not "trying to get away with something" but truly need his advice. Fortunately, most Service M.O.s realize this, give their advice gladly, and thereby do much to maintain the fighting efficiency of the troops.—I am, etc.,

London, W.1. R. OGIER WARD.

Obituary

SIR JAMES DUNDAS-GRANT, K.B.E., M.D., F.R.C.S.

One of the best-known names in British otology and laryngology has passed into history with the death of Sir James Dundas-Grant on Nov. 13. It is astonishing over how long a period his career extended. He had already been in general practice for ten years when he took up his specialty in 1886, and more than fifty years later he was still a prominent figure at all assemblies of ear, nose, and throat surgeons. Though he had long retired from practice, and his vitality in recent years had been diminished as a result of a street accident, he would examine clinical cases or specimens with the eagerness of youth and join in the discussions, recalling details of like cases he had seen or surgical procedures he had followed at any time within the last half-century.

James Dundas-Grant was born in Edinburgh in 1854, the son of a Scottish advocate. He received his education at Edinburgh Academy and went to Dunkirk College, France, as a finishing school. He then entered Edinburgh University, where he took his M.A. in 1873, spent some time also at the University of Wurzburg in Bavaria, and afterwards came to London, where he completed his medical studies at St. Bartholomew's. He qualified in 1876, took the Edinburgh M.D. with honours in 1879, became Fellow of the Royal College of Surgeons of Edinburgh in 1884, and Fellow of the English College, by examination, in 1890. In 1879 he was appointed surgeon to the Central London Throat and Ear Hospital, an appointment he continued to hold until 1913, when, retiring under the age limit, he became consulting surgeon, and so remained for many years. No doubt it was his association with the institution in Gray's Inn Road that determined him eventually to confine his work to otology and laryngology (he would never have it that they were two separate specialties). He also held appointments at various other hospitals—Brompton Hospital for Consumption, where he continued to be consulting surgeon to the ear and throat department for many years after his retirement, the Cancer Hospital, the West End Hospital for Diseases of the Nervous System, the Freemasons Hospital at Hammersmith, and the Sussex Throat and Ear Hospital at Brighton. He was an excellent and intimate instructor and held a teaching post in laryngology and otology in connexion with the University of London. His pen also was extremely active. It does not appear that he ever wrote a book, but he was a prolific contributor to the medical journals, general and special, and to the annuals and encyclopaedias, on the subject of the ear and throat. He had an inquiring mind, an aptitude for precise detail, and a good deal of mechanical ingenuity. Again and again at medical meetings he would bring forward some new contrivance—or more often perhaps some old contrivance of his own devising, such as a cannula for aspirating the middle ear, or a ligature applicator for tonsillar and other deeply seated vessels, or some modification of an aid for hearing so as to make it more efficient or comfortable. He rarely lost an opportunity to intervene in debate, and generally it was to contribute something from his own experience.

During the war of 1914–18 Dundas-Grant was otologist and laryngologist to the King George Military Hospital, to Lord Knutsford's Hospitals for Officers, to the New Zealand Military Hospital, and to the Russian Hospitals for Officers, among others. He also busied himself as a lecturer at the College of Ambulance founded by Sir James Cantlie. He himself was a surgeon-major in the Rifle Volunteers and principal medical officer of a brigade of the London Division of the National Reserve. In 1917 he became specialist on the Aural Board and director of the special aural clinics of the Ministry of Pensions, a post he retained until 1920, when he became senior consultant to the Ministry and was created a Knight.

Another of his offices in which he took special delight was that of surgeon to the Royal Academy of Music and the Royal Society of Musicians. He was himself an enthusiastic musician, and his chosen recreation was orchestral conducting. He was also keenly interested in science and was a vice-president of the Royal Institution.

Dundas-Grant had many international contacts. He was an honorary member of the American Laryngological Association and the American Interstate Postgraduate Association, also of the societies of otologists and laryngologists in France, Belgium, Italy, and Austria. He was an excellent society man, eager to share with his colleagues any unusual clinical experience and equally eager to learn from them. One of his special interests was in research on asthma; he advocated operation to correct nasal disorders for the relief of spasmodic asthma, also the operation of shortening an elongated uvula as a cure for cough. He had been president of the Section of Laryngology and Otology of the British Medical Association, of both the Otological and Laryngological Section of the Royal Society of Medicine, of the British Laryngological Association, and of the Hunterian Society. There was no more respected and well-liked figure among those who had "passed the chair."

DUNCAN M. BLAIR, D.Sc., M.B., F.R.F.P.S.

We regret to announce the death on Nov. 10 at his residence in the University of Prof. Duncan MacCallum Blair, who had held the Regius Chair of Anatomy in Glasgow University for the past nine years.

He was born on July 22, 1896, only son of the late Dr. Alexander Blair of Ashington, Northumberland, and Crinan, Argyll, and received his medical education at the University of Glasgow, where he was awarded twenty first-class certificates of merit in the various classes of the course. He graduated M.B., Ch.B. (with honours) after serving as surgeon sub-lieutenant, R.N.V.R., for two years during the last war. In 1919 he was invited by Prof. T. H. Bryce to join his staff in the department of anatomy at Glasgow University, where he remained for eight years as demonstrator and lecturer. In 1927 he came to London to succeed Prof. Barclay Smith in the university chair of anatomy at King's College, and in 1935 was appointed Dean of the Medical Faculty of King's before returning to Glasgow as successor to Prof. Bryce. While in London Prof. Blair acted as John Hunter lecturer in applied anatomy at St. George's Hospital Medical School and was external examiner in his subject for the University of St. Andrews; later he examined for the Universities of Aberdeen and Sheffield and for the Royal College of Physicians of London. He was a Fellow of the Royal Society of Edinburgh and of the Royal Microscopical Society; a member of the Anatomical Society of Great Britain and Ireland, of the American Association of Anatomists, and of the Society of Experimental Biology; he became a D.Sc. of London University in 1935, and the Royal Faculty of Physicians and Surgeons of Glasgow elected him a Fellow in 1938. He was the author of the section on arthrology in the sixth and seventh editions of *Cunningham's Textbook of Anatomy* and of papers and memoranda printed in the *Journal of Anatomy*, the *British Journal of Surgery*, and in these columns. For two of his papers, published in the *Journal of Anatomy* in 1921 and 1923, he was bracketed with A. B. Appleton (now professor at St. Thomas's Hospital Medical School) for the Symington Prize for anatomical research.

Prof. Blair had taken during the past two years a prominent part in the organization of the training of naval cadets at Glasgow as commanding officer of the University Naval Division. From boyhood he was devoted to sailing, and spent many holidays off the West Coast of Scotland. His death at the age of 48 is a loss to the country as well as to the branch of science for which he has done so much as teacher and research worker.

Medical Notes in Parliament

Workmen's Compensation

Mr. HERBERT MORRISON on Nov. 8 moved that the House welcomed the intention of the Government to replace the present system of workmen's compensation by a new scheme of Industrial Injury Insurance. He said the proposals made on this subject in a recent White Paper were a revolutionary advance in the structure of workmen's compensation administration. The Employers Liability Act of 1897 imposed a liability on the employer to pay compensation. That system was necessarily complicated and had been overlaid by complex case law. A Royal Commission on Workmen's Compensation under Sir Hector Hetherington was appointed in 1938 and collected evidence useful in the building up of the White Paper scheme. The Government plans in the White Paper were not final, but he asked the House to endorse the main principles. The new scheme transferred to the community as a whole the responsibility for the casualties of industry, administered by the new Ministry of Social Insurance. There would be contributions from everyone with a contract of service and also flat-rate benefits with supplements for family responsibilities. Commutation of pensions would not be allowed. Industrial pensions would be assessed by a medical board and based on the degree of disablement resulting from the injury, compared with a normally healthy person of the same age and sex.

Mr. TOM BROWN pointed out that of those killed in industry almost half were in the mining industry. Silicosis, pneumoconiosis, dermatitis, and nystagmus should be kept in mind during the consideration of the legislation which would follow the White Paper. Mr. QUINTIN HOGG said that under the existing law it was difficult to assess incapacity. The Government proposed another system whereby a doctor could scribble a certificate to say what percentage of incapacity was to be granted.

Sir WILLIAM BEVERIDGE remarked that compensation had hitherto been based on inability to earn. So long as it was so based it was a discouragement to earn. Mr. ISAACS said the insurance companies had been making profit out of compensation and did not care how they made it. Men received postcards calling them to submit themselves to examination by a doctor. If they did not turn up their wages were stopped. The medical referee under the Workmen's Compensation Act, who sat alone and gave a final decision, had more power than the House of Lords. The Labour Party suggested that in future the final arbitrator should be chairman of a board of three. Mr. FOSTER suggested that the basis of entitlement in the Royal Warrant for War Pensions should be followed. Men in the pits or in industry should be compensated if the conditions of their employment caused or aggravated a disability.

Dr. HADEN GUEST said he had worked as a doctor in workmen's compensation insurance cases and knew that the object of the society was to pay the least possible money to the insured. There were companies who employed doctors for the purpose of bullying their clients into accepting payments which were unfair. He had been employed by an organization which expected him to make the people who came to consult him return to work before they, in his opinion, were really fit to do so, and to accept lump-payment compensation when that was not right. After a short experience he and that organization parted company. He had heard they had since improved.

Medical News

The Royal Society has awarded one of its two Royal Medals to C. R. Harington, Ph.D., F.R.S., for his work in the analysis and synthesis of thyroxine, and in immunological chemistry. Dr. Harington has been director of the National Institute for Medical Research, Hampstead, since 1942, when he resigned the chair of chemical pathology in the University of London, which he held at University College Hospital Medical School.

The next meeting of the Medical Society for the Study of Venereal Diseases will be held to-day (Saturday, Nov. 25) at 2.30 p.m., at 11, Chandos Street, Cavendish Square, W., for a discussion on the social aspects of venereal disease.

At a meeting of the Paddington Medical Society on Tuesday, Nov. 28, at 9 p.m., in the Board Room of St. Mary's Hospital, Dr. C. C. Worster Drought will give a lecture on recent advances in neurology.

A joint meeting of the Scientific and Technical Group of the Royal Photographic Society and of the Association for Scientific Photography to discuss electron micrography will be held to-day (Saturday, Nov. 25) at 3 p.m., at the rooms of the Royal Photographic Society, 16, Prince's Gate, London, S.W.

A lecture on research in all its various aspects essential for the promotion of health and the prevention of disease (arranged by the Chadwick Trustees under the Malcolm Morris Memorial Trust) will be given by Dr. J. A. H. Brincker on Tuesday, Nov. 28, at 2.30 p.m., at Westminster Hospital Medical School, 17, Horseferry Road, S.W.

Mr. Somerville Hastings, chairman of the L.C.C., will deliver an address on "Hospitals in a New World" to a meeting of the Polish Medical Association in the United Kingdom on Tuesday, Nov. 28, at 5 p.m., in the Hastings Hall of B.M.A. House. Medical practitioners and medical auxiliaries will be welcome.

Brig. L. E. H. Whitby will give a lecture on the Army Blood Transfusion Service, illustrated by lantern slides, at the Royal Society of Arts, John Adam Street, Adelphi, W.C., on Wednesday next, Nov. 29, at 1.45 p.m.

The Scientific Film Association is presenting a programme of recent films of medical interest, chosen by its Medical Standing Committee, by invitation of the Royal Society of Medicine, at 1, Wimpole Street, W.1, at 5.30 promptly, on Thursday, Dec. 7. The meeting is open to medical practitioners, medical students, and nurses in the London area, but by ticket only, to be obtained from the Medical Hon. Secretary, 14, Hopton Road, S.W.16, before Dec. 1.

The Council of the Royal Medical Foundation of Epsom College will shortly proceed to award St. Anne's Scholarships to girls attending Church of England schools. Candidates must be fully 9 and under 16 years of age, and must be orphan daughters of medical men who have been in independent practice in England or Wales for not less than five years. The Council will also in March award a "France" pension of at least £30 per annum to a necessitous medical man, fully 55 years of age, who has been registered for five years. Forms of application for the scholarships and for the pension can be obtained from the Secretary's Office, Epsom College, Epsom, Surrey, and must be completed and returned to that office by Jan. 15, 1945.

The Ministry of Health has issued to County Councils, County Boroughs Councils, and Joint Cancer Committees a circular (123/44) enclosing printed directions for the use of record cards for cancer cases which the Minister has prescribed after detailed consultation with the Cancer Subcommittee of his Medical Advisory Committee.

EPIDEMIOLOGICAL NOTES

Discussion of Table

In *England and Wales* during the week measles, diphtheria, and whooping-cough rose in incidence by 385, 79, and 74 cases respectively, while falls were recorded for scarlet fever 139, and dysentery 106.

Yorks West Riding recorded a rise of 188 in the incidence of measles. There were also rises in Cheshire and Warwickshire of 101 and 96 respectively, but a fall of 116 in Lancashire, where, nevertheless, one-third of the notifications for the country were reported. Cheshire had 31 more cases of whooping-cough than last week. The great increase in diphtheria resulted in the largest weekly total for over six months. Lancashire had 48 more cases than last week (Lancaster M.B. 24 more), and Cheshire 28. The fall in scarlet fever ends a continuous rise of ten weeks; Nottinghamshire had 45 fewer cases than last week, and Yorks West Riding 42.

Although the notifications of dysentery fell by 106 to the lowest level of the past eleven weeks, the incidence is still high, 256 cases being recorded. The largest returns during the week were London 38, Surrey 33, Essex 31, Lancashire 30, Glamorganshire 22, Gloucestershire 11, Yorks North Riding 11. During the past eleven weeks 35% of the total notifications were recorded in the region comprising London, Surrey, Kent, Middlesex, Hertfordshire, and Essex.

In *Scotland* the only notable fluctuations in the incidence of infectious diseases were an increase of 34 for scarlet fever, and a decrease of 35 for diphtheria.

In *Eire* the incidence of infectious diseases underwent little change. One case of typhus fever was reported from Galway, Loughrea R.D.

In *Northern Ireland* the notifications of measles in Belfast C.B. rose from 96 to 143.

Week Ending November 11

The notifications of infectious diseases in England and Wales during the week included: scarlet fever 2,132, whooping-cough 1,297, diphtheria 642, measles 5,752, acute pneumonia 583, cerebrospinal fever 37, dysentery 320, paratyphoid 3, typhoid 4, acute poliomyelitis 13.

No. 44

INFECTIOUS DISEASES AND VITAL STATISTICS

We print below a summary of Infectious Diseases and Vital Statistics in the British Isles during the week ended Nov. 4.

Figures of Principal Notifiable Diseases for the week and those for the corresponding week last year, for: (a) England and Wales (London included). (b) London (administrative county). (c) Scotland. (d) Eire. (e) Northern Ireland.

Figures of Births and Deaths, and of Deaths recorded under each infectious disease, are for: (a) The 126 great towns in England and Wales (including London). (b) London (administrative county). (c) The 16 principal towns in Scotland. (d) The 13 principal towns in Eire. (e) The 10 principal towns in Northern Ireland.

A dash — denotes no cases; a blank space denotes disease not notifiable or no return available.

Disease	1944 (a)	(b)	(c)	(d)	(e)	1943 (Corresponding Week) (a)	(b)	(c)	(d)	(e)
Cerebrospinal fever	42	3	24	4	—	44	4	27	3	4
Deaths		1	—				1	2		
Diphtheria	633	12	169	120	30	770	41	179	117	40
Deaths	8	—	1	—	—	12	1	5	—	1
Dysentery	256	38	90	1	—	146	43	156	—	7
Deaths				—	—				—	—
Encephalitis lethargica, acute	—	—	—	—	—	4	—	1	1	—
Deaths		—					—			
Erysipelas			55	14	5			60	6	2
Deaths		—					—			
Infective enteritis or diarrhoea under 2 years				39					29	
Deaths	45	3	7	17	5	44	10	14	12	3
Measles*	4,827	80	307	27	145	553	46	62	29	2
Deaths	4	1	2	—	—	—	—	—	—	—
Ophthalmia neonatorum	74	5	14	1	1	85	8	17	—	1
Deaths										
Paratyphoid fever	3	1	1 (B)	—	—	4	—	—	—	1
Deaths	—	—	—	—	—	—	—	—	—	—
Pneumonia, influenzal†	520	25	10	3	4	676	32	29	2	1
Deaths (from influenza)	18	3	2	—	2	31	4	20	1	1
Pneumonia, primary			179	20				306	21	
Deaths		31		10	8		30		13	13
Polio-encephalitis, acute	—	—				—	—			
Deaths		—					—			
Poliomyelitis, acute	14	—	4	1	—	11	—	1	2	—
Deaths		—					1			
Puerperal fever		4	21		—		2	26		—
Deaths										
Puerperal pyrexia‡	155	7	13	1	—	142	7	14	1	2
Deaths		—					—			
Relapsing fever	—	—			—	—	—			—
Deaths										
Scarlet fever	2,149	56	359	42	63	3,374	237	407	61	111
Deaths	3	—	2	—	—	1	—	—	—	—
Smallpox	—	—	—	—	—	—	—	—	—	—
Deaths				—	—				—	—
Typhoid fever	5	1	3	4	—	4	—	2	10	—
Deaths	—	—	—	—	—	—	—	—	—	—
Typhus fever	—	—	—	1	—	—	—	—	—	—
Deaths				—	—				—	—
Whooping-cough*	1,135	49	82	13	11	1,755	108	216	16	29
Deaths	7	—	2	—	—	7	—	3	—	—
Deaths (0–1 year)	332	30	53	42	14	318	41	63	35	22
Infant mortality rate (per 1,000 live births)										
Deaths (excluding still-births)	4,352	584	596	207	106	4,171	611	630	204	135
Annual death rate (per 1,000 persons living)			13·7	13·4	§			14·2	13·4	§
Live births	6,653	545	896	320	274	5,675	717	839	336	263
Annual rate per 1,000 persons living			18·2	20·8	§			17·1	22·1	§
Stillbirths	228	19	39			189	22	42		
Rate per 1,000 total births (including stillborn)			42					48		

* Measles and whooping-cough are not notifiable in Scotland, and the returns are therefore an approximation only.

† Includes primary form for England and Wales, London (administrative county), and Northern Ireland.

‡ Includes puerperal fever for England and Wales and Eire.

§ Owing to evacuation schemes and other movements of population, birth and death rates for Northern Ireland are no longer available.

Universities and Colleges

UNIVERSITY OF SHEFFIELD

At a meeting of the University Council held on Nov. 10 the following appointments were made: Dr. C. H. Bosenberg, registrar of the Children's Hospital, as temporary lecturer in diseases of children; and Dr. Andrew Wilson, as temporary lecturer in medicine for dental students.

ROYAL COLLEGE OF SURGEONS OF ENGLAND

At an ordinary meeting of the Council held on Nov. 9, with Sir Alfred Webb-Johnson, President, in the chair, Mr. V. Zachary Cope, Mr. C. E. Shattock, Mr. E. W. Riches, and Mr. W. H. C. Romanis were re-elected, and Mr. V. C. Pennell and Mr. A. J. Gardham were elected Members of the Court of Examiners. The Hallett prize was awarded to John Davis Green, B.M., B.Ch., of Oxford University. Mr. L. E. C. Norbury was nominated as representative of the College on the Central Council for District Nursing in London for a further period of three years. Dr. D. H. Tompsett was appointed Prosector to the College.

Diplomas of Membership were granted to R. A. Allen and to the candidates whose names were printed in the report of the meeting of the Royal College of Physicians of London published in the *Journal* of Nov. 4 (p. 612).

ROYAL COLLEGE OF PHYSICIANS OF EDINBURGH

At a quarterly meeting of the College held on Nov. 7, with Dr. A. Fergus Hewat, President, in the chair, Dr. W. F. Haultain, O.B.E., *M.C.*, was elected a Fellow.

ROYAL COLLEGE OF PHYSICIANS OF IRELAND

At a meeting of the President and Fellows of the College held on Nov. 3 the following were admitted Licentiates and Members:

Violet K. St.G. Breakey, M.B., E. de Valera, M.B., S. P. O'Toole, M.B.

ROYAL FACULTY OF PHYSICIANS AND SURGEONS OF GLASGOW

At the annual meeting of the Faculty held on Nov. 6 the following officers were elected for the ensuing year: President, Mr. William A. Sewell; Visitor, Dr. Geoffrey B. Fleming; Honorary Treasurer, Mr. Walter W. Galbraith; Honorary Librarian, Dr. W. R. Snodgrass; Representative on the General Medical Council, Mr. Andrew Allison.

The Services

Temp. Surg. Lieut. D. G. Thompson, R.N.V.R., has been mentioned in dispatches. This name appears in a list of awards for outstanding courage, skill, and determination in pressing home a successful attack on the Japanese naval base at Sabang.

Acting Surg. Cmdr. C. P. Collins, R.N., has been awarded the D.S.C., and Acting Surg. Cmdr. R. D. Bradshaw, Temp. Acting Surg. Lieut.-Cmdrs. D. W. Burnford and G. D. Channell, and Temp. Surg. Lieuts. R. G. G. Evans, G. C. Haywood, and D. A. Maciver, R.N.V.R., have been mentioned in dispatches for gallantry, skill, determination, and undaunted devotion to duty during the landing of Allied Forces on the coast of Normandy.

The *London Gazette* has announced the award of the M.C. to Fl. Lieut. R. N. Rycroft, R.A.F.V.R. The citation reads as follows:

Fl. Lieut. Rycroft was the only medical officer on one of the beaches of Normandy on "D" Day. Owing to the intense bombardment, it was not possible for him or any member of his unit to move off the beach for six hours. He worked for 48 hours tending casualties among the personnel of his unit and also aided some 75 American wounded. He was himself slightly wounded, but his efforts on behalf of others were untiring. He set an example of great courage and devotion to duty and was responsible for saving many lives.

CASUALTIES IN THE MEDICAL SERVICES

Previously reported wounded and missing at Arnhem, now known to have been shot dead while attending the wounded.—Capt. Gareth Fitzalan Howard Drayson, R.A.M.C.

Previously reported missing at Arnhem, now known to be a prisoner of war.—Capt. C. A. Simmons, R.A.M.C.

Missing at Arnhem, believed prisoner of war.—Lieut. P. S. Allenby, R.A.M.C.

Wounded.—Lieut. J. T. S. Buchan, War Subs. Capt. L. G. Harper, M.C., Temp. Major R. H. C. Manifold, Temp. Lieut.-Col. J. J. Myles, R.A.M.C.

Letters, Notes, and Answers

All communications with regard to editorial business should be addressed to THE EDITOR, BRITISH MEDICAL JOURNAL, B.M.A. HOUSE, TAVISTOCK SQUARE, LONDON, W.C.1. TELEPHONE: EUSTON 2111. TELEGRAMS: *Aitiology, Westcent, London.* ORIGINAL ARTICLES AND LETTERS forwarded for publication are understood to be offered to the *British Medical Journal* alone unless the contrary be stated.

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ANY QUESTIONS?

Treatment of Menopausal Menorrhagia

Q.—*What is the modern treatment for menopausal menorrhagia?*

A.—It is not possible to give a simple answer to this question, since haemorrhage from the genital tract is so very common at the time of the menopause and may be due to such a variety of conditions.

In the case in which there is a true menorrhagia—that is, an increase of the loss of blood at normally occurring menstrual periods—and provided the pelvic organs are clinically normal, both on bimanual examination and on inspection of the cervix with a speculum, it may be possible to tide the patient over the menopause, which may last for no more than a few months. Anaemia should be combated by adequate doses of iron (18 gr. exsiccated of ferrous sulphate daily). It must be remembered, however, that many diseases of the pelvic organs are especially liable to occur at this time. These include metropathia haemorrhagica and, above all, malignant disease of the uterus. Every case in which there is severe haemorrhage or where the haemorrhage is prolonged or occurs at other times than at the normal menstrual periods should be submitted to examination under anaesthesia and curettage. Any gross pathological lesion, such as carcinoma or a uterine fibroid, should receive the appropriate treatment.

Opinion is divided on the best treatment for functional uterine haemorrhage, including metropathia haemorrhagica, at the time of the menopause. Many cases are cured by curettage of the uterus, and it is often worth while observing the effect of this simple and relatively safe procedure. If bleeding still continues there are two possibilities. An artificial menopause may be induced, and radium, radon, or *x* rays are all used for this purpose. Alternatively, the uterus may be removed either by the abdominal route or, especially in a parous woman, by vaginal hysterectomy. The advantage of this more radical treatment is that the danger of carcinoma of the uterus is for ever dispelled, and some ovarian tissue can usually be left so that the patient does not experience the severe general symptoms of the artificially induced menopause. The risk of carcinoma of the uterus after an artificial menopause is not negligible, and as I have seen three cases of rapidly spreading carcinoma of the uterine body after radium menopause in recent years, it is believed that removal of the uterus is usually preferable provided the patient's general condition is good. The disadvantage of the more radical procedure of hysterectomy is that the period of disability is longer, and the risk of death which a patient who undergoes a major operation has to face. Hormones, while of acknowledged value for the treatment of menopausal symptoms such as flushing, are disappointing for the treatment of menopausal haemorrhage.

Raspberry-leaf Extract

Q.—*There is a demand among pregnant women in this district for tablets of raspberry leaves, or they drink an infusion of raspberry leaves to stop pregnancy vomiting. What are the pharmacology and toxicology of these leaves? Martindale and all my reference books give no information. Are there any dangers?*

A.—It has been shown by Burn and Withell (*Lancet*, 1941, 2,) that raspberry leaves contain an active principle which causes relaxation of uterine muscle. It is presumably because of this principle that infusions of raspberry leaves have been found to give relief in painful menstruation, where the pain may be due to contractions of the uterus attempting to drive blood clots through a too rigid cervix. Similarly, infusions of raspberry leaves taken late in pregnancy may have the effect of making dilatation of the cervix an easier process when labour begins. There is no suggestion that raspberry infusions have any effect on pregnancy vomiting. There is no evidence of the presence of toxic substances in raspberry-leaf infusions, so that the practice of taking them is devoid of risk. (See also article in *British Medical Journal* by Sir Beckwith Whitehouse, Sept. 13, 194 p. 370; and letter by J. H. Burn, Sept. 20, 1941, p. 418.)

Treatment of Varicose Ulcer

Q.—A man aged 65 has had an ulcer on the medial side of the lower third of the leg for four years. When I saw him first it extended half-way up his leg. I injected his veins with ethamolin and they are now normal. W.R. negative. He has had elastoplast and viscopaste bandages, but now he cannot tolerate either of these, or ichthopaste. Despite many treatments, with rest, the ulcer remains indolent.

A.—First, the presence of diabetes, local or general nerve disease, obliterative arteritis, and syphilis should be excluded. In addition, septic absorption from septic or dead teeth and infected tonsils will prevent an ulcer from healing. The diabetes is occasionally latent by the patient having a high renal threshold; recently a case was seen where it was 250; only a complete diabetic investigation revealed it. The ulcer, which had been under treatment on and off for four years, healed in less than a fortnight when dieting and insulin were started. The obliterative arteritis is detected by the absence of pulsation in the dorsalis pedis artery, and, when it is calcified, by *x*-ray examination of the leg.

The local conditions are the persistence of varicose veins. There are two types, although rare and not generally known, which may be present. The first is incompetence of the external saphenous vein, which can be detected by the two-tourniquet test—i.e., elevating and emptying the veins, putting on two tourniquets, one above and the other below the knee, and asking the patient to stand. The lower band is then released, and if the external popliteal vein is incompetent a down-filling wave of varying size will be seen in the veins of the leg. The second item is inefficient deep communicating veins, usually situated in the lower third of the inner surface of the leg and diagnosed by feeling a defect in the deep fascia somewhat like a button-hole. There may be one or two such vessels. They are not easily detected. Another way to prove their presence is to put on a tourniquet below the knee, ask the patient to stand, and if the communicating veins are faulty the empty veins will be seen to fill up within thirty seconds.

The treatment is to ligature and inject the external saphenous vein at its termination in the popliteal space. The communicating veins are cut down on and dissected out, divided between ligatures, and the deep fascia closed. The bleeding from them is surprising in its volume and pressure. The operation is more difficult than ligature and injection of either the internal or external saphenous veins, but the results in these persistent ulcers make the trouble worth while.

Synovial-tissue Proliferation

Q.—Is the operation of bilateral removal of patellae likely to be worth while in treatment of serious synovial-tissue proliferation with much grating on knee movement and pain in rubbing the patellae against femoral condyles?

A.—The operation of bilateral removal of the patellae for the relief of serious synovial-tissue proliferation with much grating on knee movement and pain would appear to be a heroic remedy which might easily increase the disability it was sought to relieve; simple synovectomy, which has been practised especially in America, would be a more appropriate procedure.

Human Semen by Post

Q.—Artificial insemination of human semen is, I believe, increasingly practised in America. Can you tell me what is the ideal temperature for keeping semen and, if sent by post, how long it will remain active?

A.—Semen for artificial insemination should be as fresh as possible (not older than 3 hours). It should be collected without a sheath into a warm glass tube. Sudden chilling seriously disturbs the viability of some specimens. If the semen is going to be used within 2 hours of collection it is probably best to keep it warm (near to blood heat). If the interval between collection and insemination is going to be longer (2 to 6 hours) it is best to allow the specimen to cool gradually to cool-room temperature (about 25° C.) and to inseminate at this temperature; contact with the female genital tract will do all the warming up that is needed. It is not desirable to delay longer, as the chances of success, even with highly fertile specimens, are then much reduced. It is extremely unlikely that a specimen of human semen sent by post (12 to 36 hours old) would still be capable of effecting fertilization, but perhaps they have speedier postal services in America than we have here in wartime. The only chance of preserving fertilizing capacity for 12 hours or more would be to dilute one part of semen (provided it had an initial density of at least 100 million per c.cm.) with 2 or 3 parts of Walton's buffered glucose or egg-yolk–citrate solution, cool it gradually to 4° C.; and post it in a thermos packed with ice. The writer has no first-hand experience of this method, and feels it would be simpler to get the donor to transport himself nearer to the recipient.

Staphylococcal Infection of Bone

Q.—How long can a staphylococcal infection of bone remain latent or quiescent? Can an osteomyelitis of lower end of femur, which eventually necessitated amputation, be attributed to a compound fracture of lower end of same femur which happened 25 years ago? There was no history of any recent accident, but the patient had a meningococcal meningitis about a year previously.

A.—That staphylococcal or other infection of bone may remain latent for many years is well known, and it would be rash to put any limit to its latency. It is unusual for the organism to remain quiescent and alive in bone for many years without giving some indication of its presence. C. W. Pannett (*Surgery: A Textbook for Students;* Hodder and Stoughton) writes of osteomyelitis of bone on p. 462: "The organism which is responsible appears to acquire a predilection for growing in bony tissue, and it also appears to be capable of remaining quiescent for a very long time, often many years, so that in subsequent life it may be responsible for inflammation of the bone in its neighbourhood, or attack another bone." While it would certainly be possible to attribute an osteomyelitis of the femur to a latent infection incurred at the same site twenty-five years earlier, it would nevertheless be unreasonable to do this in the complete absence of symptoms referable to that site during the whole of that period.

Eczema–Prurigo–Asthma Syndrome

Q.—Can you advise me as to treatment of a chronic irritation of skin of face, neck, front of chest, and arms, in a girl of 18 who has had infantile eczema when she was 6 months old which left her with asthma on and off till she was 9 years old? Her asthma now only comes on when she has a bad attack of cold, but lately (last 18 months) she is troubled with skin irritation which does not respond to any treatment—lotions or ointments. She is healthy and well developed in all respects and has a varied diet. Rash at times looks urticarial; at other times it resembles a bright-red inflammation—very rarely weeps. Face at times gets puffy, and she has difficulty in opening her eyes in the morning.

A.—The girl described is suffering from what is usually known as the eczema–prurigo–asthma syndrome if the skin irritation is predominantly round the neck and in the flexures of the elbow and wrists. In addition she appears to get some urticaria, and the swelling of the eyelids and face in the morning is an angioneurotic oedema. These are allergic conditions, due in early childhood largely to foods, but after puberty more often due to a sensitivity to feathers, dusts, powders, animal hairs, pollens, and even drugs, and the patient should be skin-tested intradermally with such irritants. Failing this the pillows, bolster, mattress, and eiderdown should be freed from any feathers, down, horsehair, or dusty substances such as old kapok or flock; orris-root face or talcum powders be forbidden; and animals be removed from the environment. If dust or pollen sensitivities are suggested or shown on testing, desensitization is necessary. Most of these cases show a diminished secretion of hydrochloric acid in the stomach, so 20 minims before each meal in a glass of water would be beneficial. To cut down the irritation, ephedrine hydrochloride (1/2 gr.) and luminal (1/2 gr.) each morning and evening would be helpful. If the general skin is very dry, thyroid therapy leads to improvement. The puffiness of the face on waking is due to a sensitivity to a feather, down, or horsehair pillow or to an aspirin or veganin tablet taken at night, or both. As many of these cases in early childhood are fish-sensitive, a synthetic vitamin preparation should replace halibut oil.

A Case of Myxoedema

Q.—Could you please give me advice on the following case? History: Patient aged 30, married, no children; operated on for toxic goitre August, 1943. Subsequently developed what I took to be myxoedema with thickening of the subcutaneous tissues and complete loss of hair. I treated her with thyroid extract up to 6 grains daily. The hair came but has again suddenly fallen out, although she is still taking 6 grains of thyroid daily. The thyroid never had any effect on the general body swelling, and the pulse rate never went above 76. She also has amenorrhoea, for which I gave her stilboestrol, with no effect. Is there a possibility of pituitary involvement? The pupils are often widely dilated; sometimes she sees double and has headache. Urine normal, no sugar; B.P. normal. She will not consent to go into a hospital for treatment and investigation.

A.—This is a bit of a teaser. We can assume that the diagnosis of post-operative myxoedema was correct. It is a possibility (made probable by the fact that the body swelling was not reduced or the pulse rate greatly increased) that the dose of thyroid was insufficient. Much higher doses are sometimes required. The recent relapse suggests that even to the insufficient dosage she has developed some degree of tolerance. Amenorrhoea is a fairly common concomitant of myxoedema. The exact explanation is not known with certainty. One hypothesis relies on the fact that both the gonadotrophic and thyrotrophic hormones are secreted by the basophil cells of the

pituitary. When the thyroid is removed it is possible that the basophils are stimulated into activity in an attempt to overcome the thyroid deficiency. Should there be an increase in both trophic hormones, the ovaries of some women may be so stimulated as to keep the blood oestrogen too high for uterine bleeding to occur. Another hypothesis regards the thyroid secretion as necessary for the healthy function of the ovaries.

The case notes given do not suggest acromegaly, but this condition could be excluded by a radiograph of the skull. Though no great reliance should be put on them, a B.M.R. and blood cholesterol done on her present intake of thyroid would help to decide whether she is having enough. These investigations can be done in "out-patients." The matter of the amenorrhoea really requires an endometrial biopsy for its elucidation, but it is not usual in this country to do this except on in-patients. As she is so difficult about investigations, it might be worth while to try giving 60 mg. of ethisterone by mouth for five days and repeating this at intervals of a month. Any treatment given without the most complete investigation is bound to be of the "hit-or-miss" variety.

Micturition Habits of Men and Women

Q.—*Does the reason for the comparative, and at times embarrassing, infrequency of micturition in women lie in a greater bladder capacity? What is the incidence of nocturnal enuresis in females compared with the figures for boys and adult males?*

A.—The larger pelvis of the female may be a factor in allowing tolerance of a full bladder, though there is no evidence that its capacity is normally greater than in the male. The relative infrequency of micturition in the female is probably chiefly due to habit, the opportunities for micturition being somewhat restricted under the conditions of so-called civilized life. Other factors of importance are that most women take a smaller volume of fluid than men do, and that they are less susceptible to cold, probably owing to more subcutaneous fat—as evidenced by their ability to wear scantier clothes, and when bathing to remain in the water longer than men—and are therefore less subject to the resulting diuresis.

Nocturnal enuresis is generally considered less common in little girls than in boys, and this will be found to be the experience of those who have charge of clinics where treatment is sought for this condition; but it should be noted that Still records 200 cases under his care as being made up of 102 boys and 98 girls. It is a relatively uncommon condition in adult males and very rare in adult females.

Arteriosclerosis

Q.—*What are the present-day views about the cause of arteriosclerosis? Do dietary factors or alcohol or tobacco play a definite part? Is the condition reversible in its early stages (? atherosclerosis)? I seem to remember that Aschoff said it was. Is a normal blood pressure common with it, and are those with it and a normal b.p. more likely to develop coronary thrombosis than those with a raised b.p.?*

A.—Arteriosclerosis is an omnibus name which includes at least three conditions.

(1) Atherosclerosis is a patchy, intimal fatty change. A superficial resemblance to this condition has been produced in rabbits by a diet containing large amounts of cholesterol—a diet so unnatural that the conclusions cannot be applied with advantage to the human disease. Another recent view is that the atheromatous lesions occur as the result of invasion of the intima from the blood stream by phagocyte cells carrying lipoid. Other views stress factors such as local mechanical stress, increased wear and tear, local anoxaemia, intimal haemorrhage, chronic toxaemia, and metabolic disorders. There is good reason to believe that the intimal fatty streaking associated with severe toxaemia is reversible.

(2) Mönckeberg's degeneration is a senescent change which may occur prematurely and is then most frequently associated with diabetes mellitus. The degeneration is a necrosis and calcification of the media of medium-sized arteries.

(3) Arteriosclerosis is the name applied here to the ageing change which appears in arteries as a medial fibrosis and intimal-cellular hyperplasia; and in arterioles as a diffuse hyaline thickening. It is commonly, but not always, associated with essential hypertension. When it occurs with essential hypertension the picture is modified by a difference in distribution and an increase in severity of the changes. Neither Mönckeberg's degeneration nor arteriosclerosis in this narrower sense is believed to be reversible.

There is no real evidence that dietary factors, alcohol, or tobacco play a part, but anything which hastens the coming on of age may reasonably be expected to hasten arteriosclerosis. Present-day views add little to Clifford Allbutt's conclusion that "it cannot be supposed that the stealthy hours carry away no qualities of tissue, no quantities of energy." A normal blood pressure is quite common with atherosclerosis. It is uncommon with severe arteriosclerosis, because, first, the aorta becomes less elastic in severe cases and there is a corresponding increase in the pulse pressure, mainly as the result of a rise in the systolic level; and, secondly, essential hypertension is frequently associated with severe arteriosclerosis. There is very little correlation between the condition of the coronary arteries and that of the peripheral vessels, and it would seem that the patient with a raised blood pressure and cardiac hypertrophy is actually more likely to develop coronary thrombosis than the patient with arteriosclerosis of the peripheral vessels and a normal blood pressure.

Deamination of Amino Acids

Q.—*Can you tell me where amino acids are deaminated? The theory was that it was done by enzymes in the liver; but several writers mention that it takes place in the kidneys as well. If deamination occurs in liver only, then excess of ammonia would indicate error in liver function; but if it occurs in kidney, this would not be so, and the ammonia/urea coefficient would have a different meaning.*

A.—Amino acids are deaminated in the liver and in the kidney. In both these organs specific deaminizing enzymes can be demonstrated. It is possible that deamination subserves different functions in these two sites. Hepatic deamination is primarily concerned with the liberation of the non-nitrogenous residue of amino acid for energy purposes and the nitrogenous fraction is converted to urea. The renal deamination is essentially concerned with the acid/base balance and the excretion of ammonium salts in the urine. The ammonia/urea coefficient is more an indication of renal than hepatic function and its interpretation is complex. Further information may be obtained from J. P. Peters and D. D. van Slyke, *Quantitative Clinical Methods*, Vol. 1.

Perspiring Feet

Q.—*Do you know any cure for perspiring feet?*

A.—There is no satisfactory cure for perspiring feet. Some relief may be obtained with dusting powder containing 3% salicylic acid (without starch for obvious reasons); or with weak formalin solution, provided no dermatitis is thereby set up. In several cases sympathectomy has been carried out, but the benefit is temporary. In the writer's view *x* rays are undesirable because in obtaining an effective result the skin may be damaged. Scrupulous cleanliness is required, and if the socks after washing are soaked in saturated boric acid solution and allowed to dry some of the unpleasant effects of the excessive sweating are considerably modified.

Growth on Ear

Q.—*A hard "warty" growth appeared on the tip of the ear over one year ago. Usual wart treatment applied (salicylic acid and cannabis indica); no effect. Later radium and direct-contact ray applied at different times; again no effect. Microscopical examination reveals excess fibrous tissue, epithelial cells, necrosis, no neoplasm. Site painful on pressure, showing signs of "wear and tear." What may be the exact nature, and any remedy or remedies?*

A.—The original condition may have been a wart or a new growth with modifications in the tissues following radiotherapy. If the extent of the condition and the degree of "wear and tear" are considerable some form of surgical treatment may be required.

LETTERS, NOTES, ETC.

Lung Complications after Operation

Dr. W. J. YOUNG (Cambridge) writes: May I, as an old G.P. who has himself been in Mr. Bowen's hands, be allowed feebly but sincerely to say "ditto" to him in this important matter of the proper freedom of respiration after abdominal operations (Oct. 28, p. 573). I know how grateful and comforting it felt to be able to draw a deep breath.

Rest-breaks for Nurses

A scheme of rest-breaks was devised some time ago for women in industry, and now there are nine rest-break houses in being for industrial women workers. Thanks to the generosity of the British War Relief Society of the United States the first rest-break house for nurses and midwives has been made available. It is situated at Buxton in Derbyshire, in what is known as the Bedford House. The Minister of Health has circularized local authorities and voluntary hospitals and other employers of nurses drawing attention to this provision. The idea is to give the tired nurse or midwife a complete change and rest for a period normally of a week or a fortnight. The charges will be two guineas a week for qualified nurses and midwives, and 25s. a week for student nurses and pupil midwives. The Minister expresses the hope that governing bodies of hospitals and other authorities employing nurses will do all that is possible to release those of them who are in need of such a change. He adds that the rest-breaks must not be confused with ordinary holidays or convalescence, and that those who are ill and in need of medical and nursing care are not eligible for these particular facilities. The Council for the Provision of Rest-break Houses for Nurses and Midwives, which is administering this scheme, has its office at 179, Windsor House, Victoria Street, S.W.1.